FINAL
Environmental Assessment/Habitat Conservation Plan For a Portion of the Cibolo Canyon Property (Master Phase II), Bexar County, Texas

Prepared for:
United States Fish and Wildlife Service
Austin Ecological Services Field Office
10711 Burnet Road, Suite 200
Austin, Texas 78758-4460

Submitted by: Lumbermen's Investment Corporation

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January 09, 2006

COVER SHEET

Title for Proposed Action: Issuance of an Endangered Species Act Section 10(a)(1)(B) permit for incidental take of the endangered golden-cheeked warbler (*Dendroica chrysoparia*) during the construction and operation of mixed use community, including hotel-resort, golf, commercial and residential development on approximately 846-acres of the Master Phase II portion of the Cibolo Canyon Property in Bexar County, Texas.

Unit of the U.S. Fish Wildlife Service Proposing the Action: Regional Director, Region 2, U.S. Fish and Wildlife Service, Albuquerque, New Mexico.

Legal Mandate for Proposed Action: Endangered Species Act of 1973, as amended, section 10(a)(1)(B), as implemented by 50 CFR 17.22.

Applicants: Lumbermen's Investment Corporation

Permit Number: TE-102437-0

Duration: 30 years

U.S. Fish and Wildlife Service Point of Contact: Scott Rowin, U.S. Fish and Wildlife Service, 10711 Burnet Road, Suite 200, Austin, Texas 78758

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AIRC – Air Improvement Resource Center
BCVI – Black-Capped Vireo
BMP – Best Management Practice
CEQ – Council on Environmental Quality
COSA – City of San Antonio
EA/HCP – Environmental Assessment/Habitat Conservation Plan
EAA – Edwards Aquifer Authority
EARZ – Edwards Aquifer Recharge Zone
EPA – Environmental Protection Agency
ESA – Endangered Species Act
EUWD – Edwards Underground Water District
FEMA – Federal Emergency Management Agency
GCWA – Golden-Cheeked Warbler
LIC – Lumbermen's Investment Corporation
lue – living unit equivalent
MPO – Metropolitan Planning Organization
NAAQS – National Ambient Air Quality Standards
NEPA – National Environmental Policy Act
O&M – Operation and Maintenance
PGA – Professional Golfer's Association
SAWS – San Antonio Water System
TCEQ – Texas Commission on Environmental Quality
USACE – United States Army Corps of Engineers
USGS – United States Geological Society

1.0 INTRODUCTION

Lumbermen's Investment Corporation (LIC, Landowner or Applicant) owns approximately 2,855 acres (1160 hectares) of property proposed for a mixed-use community, including hotel-resort, golf, commercial, and residential development (General location Map, Figure 1). The property is bordered to the south by Evans Road and to the west by Bulverde Road in the City of San Antonio, Bexar County, Texas. The 2,855 acres is comprised of three separately purchased tracts: the Evans Road Tract (1,812 acres (733.3 hectares) acquired in 1986); the Wolverton Tract (785 acres (317.7 hectares) acquired in 2000); and the nearby, but not contiguous North Triangle Tract (258 acres (104.4 hectares) acquired in 2001) (Figure 2). The combination of these three tracts is now called the Cibolo Canyon Property (the area that would be golf and resort related, specifically, is referred to as the golf village area). The Cibolo Canyon Property was divided into two development phases: Master Phase I and Master Phase II (Figure 2). Master Phase I is located in the southern and western sections of the Cibolo Canyon Property and totals approximately 1,249 acres (505.5 hectares). Based upon the information LIC had available, it determined no impacts to threatened or endangered species would occur as a result of developing Master Phase I and as such elected not to pursue additional coverage under the Endangered Species Act of 1973, as amended (ESA). Additionally, on July 3, 2003, at LIC's request, the U.S. Fish and Wildlife Service (Service) issued a letter for Master Phase I. This letter stated that there was no information indicating that the golden-cheeked warbler (GCWA) (*Dendroica chrysoparia*) was present in the Phase I project area and that the boundary between Master Phase I and II provided a buffer between anticipated Phase I development and areas of documented GCWA habitat within Phase II. Master Phase II is located in the northern and eastern section of the Cibolo Canyon Property and totals approximately 1,606 acres (650 hectares). For the purpose of this Environmental Assessment/Habitat Conservation Plan (EA/HCP), the Cibolo Canyon Master Phase II EA/HCP Property (the "Property" or "Master Phase II") consists of all areas included in Master Phase II as depicted on Figure 2. Environmental impacts associated with Master Phase I will also be considered in the indirect and cumulative impact sections of the Environmental Assessment. The proposed section 10(a)(1)(B) permit is to cover impacts to the GCWAs associated with Master Phase II.

In accordance with the ESA, LIC has voluntarily applied for a section 10(a)(1)(B) incidental take permit ("Permit") from the Service. The requested permit is proposed to be for a term of 30 years and would authorize take of the GCWA, a federally listed endangered species. "Take" is defined in the ESA as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect" a species. "Harm" in the definition of "take" has been defined by Service regulations to include "an act that actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering." Incidental take means any prohibited take that is incidental to, and not the purpose of, conducting otherwise lawful activities [50 CFR 17.3].

This combined EA/HCP provides the required National Environmental Policy Act (NEPA) and ESA review for issuance of the Permit and approval of a habitat conservation plan (HCP) that describes how the proposed action would, to the maximum extent practicable, minimize and mitigate for the potential impacts of the authorized taking of the GCWA.

Master Phase II contains three tracts, portions of which are seasonally utilized by GCWAs: the Evans Road (approximately half of the Evans Road Tract is within Master Phase II), Wolverton, and North Triangle Tracts (Figure 2). GCWAs have been observed at various times and locations across much of Master Phase II, with the North Triangle Tract and the more incised drainages of Evans and Wolverton likely providing relatively higher habitat values than surrounding uplands.

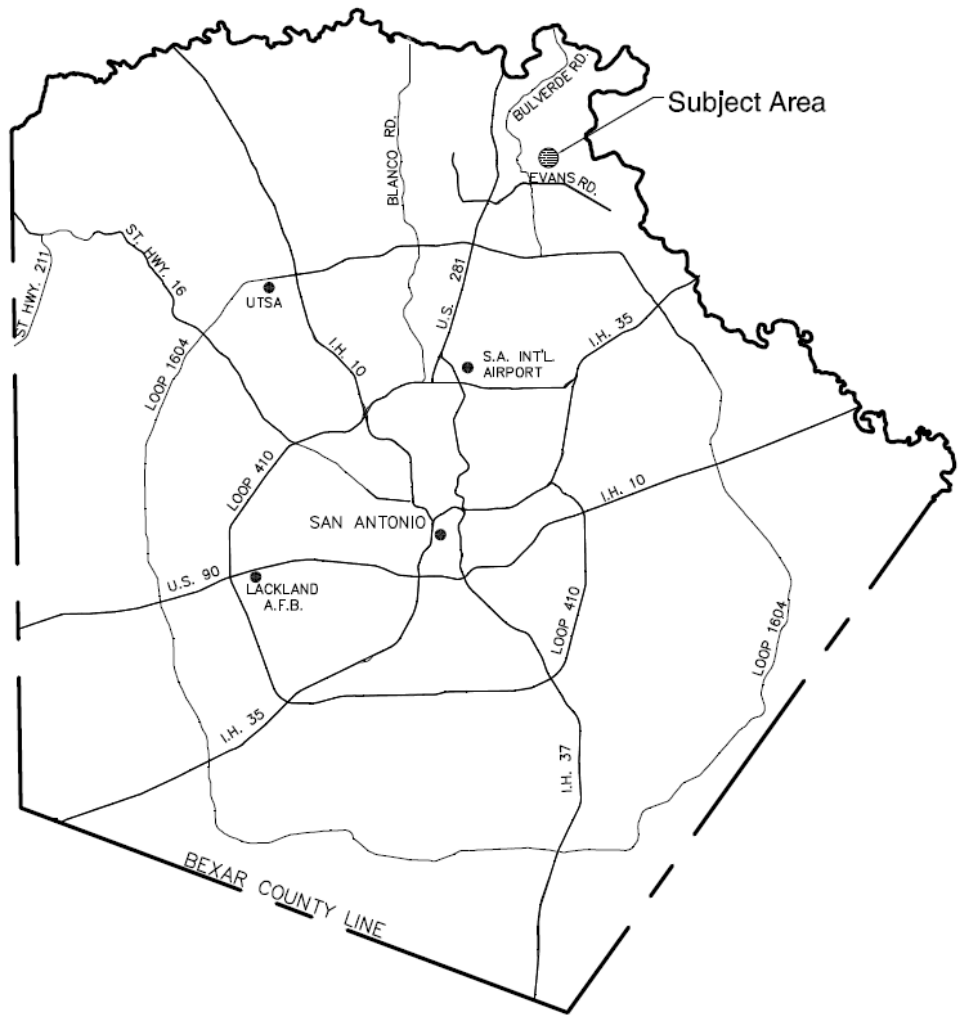
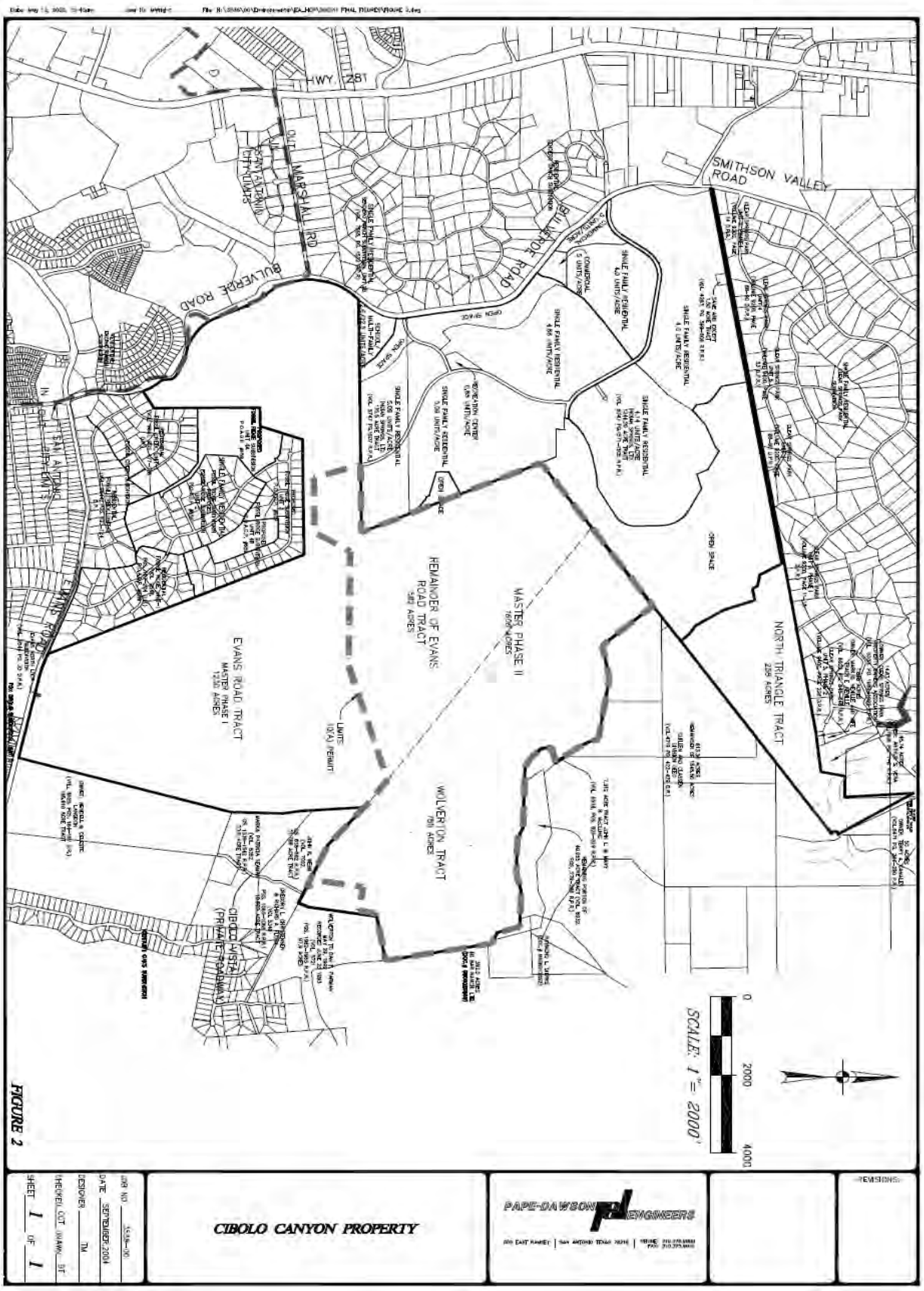

N
NOT TO SCALE
Subject Area
BULVERDE RD.
EVANS RD.
BLANCO RD.
ST. HWY. 211
ST. HWY. 16
UTSA
LOOP 1604
I.H. 10
U.S. 281
S.A. INT'L AIRPORT
I.H. 35
LOOP 410
SAN ANTONIO
I.H. 10
U.S. 90
LACKLAND A.F.B.
LOOP 410
LOOP 1604
I.H. 35
I.H. 37
BEXAR COUNTY LINE

FIGURE 1


HWY. 281
SMITHSON VALLEY ROAD
BULVERDE ROAD
OLD MARSHALL RD
EVANS ROAD
EVANS ROAD TRACT
MASTER PHASE I
1230 ACRES
REMAINDER OF EVANS ROAD TRACT
281 ACRES
MASTER PHASE II
1600 ACRES
WOLVERTON TRACT
781 ACRES
NORTH TRIANGLE TRACT
239 ACRES
LIMITS IDEA PERMIT
CIBOLO VISTA
(PRIVATE ROADWAY)
SCALE: 1" = 2000'
0
2000
4000
FIGURE 2
CIBOLO CANYON PROPERTY
PAPE-DAWSON ENGINEERS
JOB NO.
DATE SEPTEMBER 2004
DESIGNED TM
DRAWN BY
CHECKED BY
SHEET 1 OF 1
REVISIONS

This EA/HCP addresses Master Phase II and describes the impacts to the GCWA that may result from development and operation of Master Phase II. This document evaluates the Proposed Alternative and four of the numerous alternative actions considered by LIC, gives details on what steps LIC will take to minimize and mitigate for such impacts, and identifies the funding that will be made available to implement those steps.

1.1 Background

The Evans Road Tract portion of Master Phase II was part of a working ranch until it was acquired by LIC in the mid 1980's. In the period since the property was purchased, the Applicant has worked with the City of San Antonio (COSA) and with area utility, roadway, and school district planners and with regional planning authorities regarding the future development of Master Phases I and II. Other landowners of adjacent properties cooperated with the same planning entities and authorities to share in the costs to bring roadways and utilities to this desirable growth area. In consideration for the landowner's expenditures and efforts in extending COSA infrastructure on its behalf, the COSA and San Antonio Water System (SAWS) made a contractual service commitment for adequate future sewage and water infrastructure capacity. It also approved and endorsed the use of the Property as a small lot subdivision containing in excess of 9,000 living units and other neighborhood and local uses. These are so-called grandfathered rights under Texas state law. Texas provides that cities and other political subdivisions have the authority to grant and approve development rights such as future capacity in water and sewer infrastructure, and once granted, these contractual rights are exempt from future changes in most regulations and codes. This is the case with the Evans Road Tract portion of the property and its master plan was approved by COSA in the January 1995. It is this plan that is depicted in Figure 3.

The Cibolo Canyon Property has been considered by all local planning authorities for its ultimate use as a small lot mixed use community. However, six years ago, a resort hotel builder very active in San Antonio and one of several professional golfers associations (the PGA) approached LIC about jointly pursuing development of what has now become known as the 'Tournament Players Course San Antonio Golf Village' (formerly 'the PGA Village' within the Cibolo Canyon Property). The Property possesses unique qualities that influenced the golf organization's extensive selection process in evaluating this and other sites. These include, but are not limited to; the long term ownership of the Cibolo Canyon Property by LIC; LIC's prior expenditure of more than six million dollars to bring water and sewer services to the Property; and LIC's secured rights to more than 9,000 living unit equivalents (lue) of service for this specific site. Although the PGA touring professional organization, itself, may no longer be involved in the project, other golf-oriented uses are still being considered by the PGA Tour. The Property is well situated for proposed uses due to the physical location, site topography, available utilities, ease of access and proximity to necessary support sites such as residential and retail services.

Since 1995, LIC has at various times surveyed portions of the Evans Road Tract for GCWAs to monitor their presence and location. The Wolverton tract was assessed by aci consulting and Horizon Environmental Services, Inc. (aci and Horizon) biologists and was determined to have been cleared of many Ashe junipers *(Juniperus ashei)* in the mid-1990's. However, occupied habitat remains in several steep drainages of the Wolverton Tract. At the suggestion of the Service, in 2004 LIC commissioned a GCWA survey covering a large portion of the Wolverton Tract. This survey confirmed GCWA presence in these drainages. The North Triangle tract was acquired by LIC in 2001, and was first surveyed for GCWAs in 2002. It was again surveyed in 2004. Both surveys identified GCWAs throughout the property. The North Triangle portion of Master Phase II is adjacent to and north of an area owned by others, planned and dedicated in perpetuity for conservation of the GCWA pursuant to an agreement between the owners and the Service. In addition, there is an area to the south and west that is considered to be largely un-developable (due to severe topographic constraints and flood plain issues). Further,

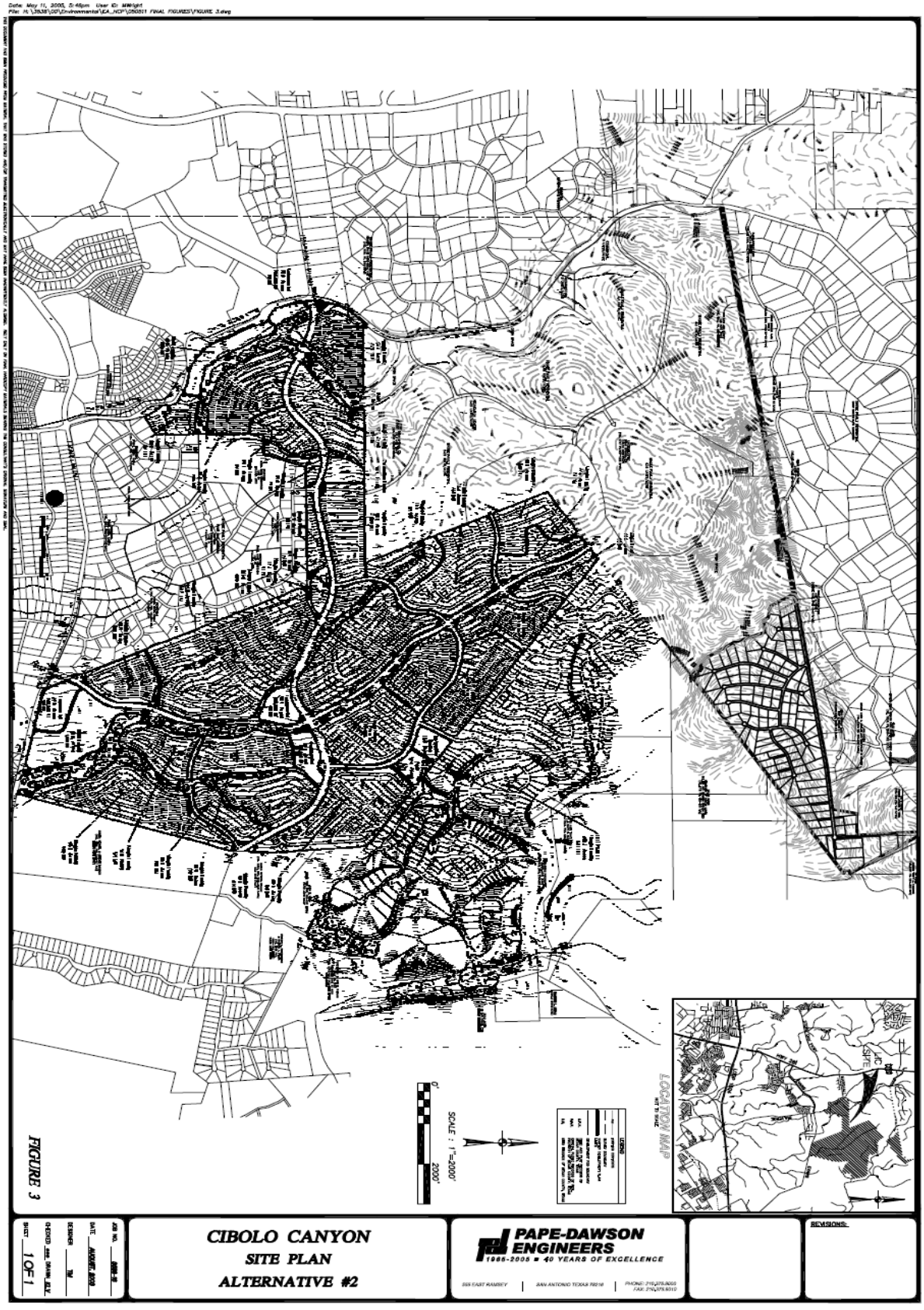


FIGURE 3
SCALE : 1"=2000'
0'
2000'
LOCATION MAP
SITE
CIBOLO CANYON
SITE PLAN
ALTERNATIVE #2
PAPE-DAWSON ENGINEERS
1966-2005 ■ 40 YEARS OF EXCELLENCE
REVISIONS:
SHEET 1OF1

the Service is advised that the Applicant, as well as other third parties acting on behalf of the COSA and the Applicant, have offered to acquire this property and/or a conservation easement thereon as recently as early May 2004. The present owners have refused any such offer and have stated they have no interest in either developing or encumbering their property in any way, stating that they wish to keep their family ranch in its current condition for their family's private enjoyment in the future.

ENVIRONMENTAL ASSESSMENT

2.0 PURPOSE AND NEED FOR PROPOSED ACTION

The proposed action is the issuance of a Permit to authorize take of the GCWA in connection with the development, operation, and maintenance of Master Phase II as a master planned, mixed-use community, including a golf-resort component. The action is needed to reduce the risk that such development might result in the otherwise prohibited take of the GCWA and to assure that the impacts of any such taking are, to the maximum extent practicable, minimized and mitigated. The purpose of this EA/HCP is to consider and evaluate the potential impacts of the project on the human environment and to provide the Applicant's "conservation plan", as required by the ESA. The proposed development of Master Phase II necessitates an evaluation of the environmental impacts of alternatives, and the no action alternative. The permit, if issued, would authorize incidental take for GCWAs associated with the development, operation, and maintenance of Master Phase II. This EA/HCP will establish the conditions under which LIC will meet the requirements for issuance of a section 10(a)(1)(B) permit under the ESA.

3.0 DESCRIPTION OF AFFECTED ENVIRONMENT

3.1 Vegetation

Vegetation within the Property can be described as generally associated with either drainages or uplands. The drainages are composed of ephemeral streambeds containing patches of Ashe juniper/live oak woodlands. The dominant tree species in the drainages include, but are not limited to: Ashe juniper, live oak (*Quercus virginiana var. fusiformis*), Texas Oak (*Q. texana*), cedar elm (*Ulmus crassifolia*), and Texas persimmon (*Diospyrus texana*). Based on consultant reports provided by the Applicant, as well as personal observations by Service personnel and review of aerial photography, canopy cover varies considerably across the property, with some areas as high as 70 percent.

Some upland areas however, contain mostly shrub and grasslands with small patches of woodlands. These areas tend to have lower canopy cover than do the steeper drainages. The dominant tree species in the uplands include, but are not limited to: Ashe juniper, live oak, cedar elm, honey mesquite (*Prosopis glandulosa*), acacia (*Acacia greggii*), and Texas persimmon.

3.2 Wildlife

Based on the compilation of various observations and reports, wildlife within the project area is comprised mainly of common species of central Texas. Common mammals on the Property are expected to include opossum (*Didelphis virginiana*), armadillo (*Dasypus novemcinctus*), fox squirrel (*Sciurus niger*), Texas mouse (*Peromyscus attwateri*), raccoon (*Procyon lotor*), and white-tailed deer (*Odocoileus virginiana*). Common resident bird species include northern mockingbird (*Mimus polyglottos*), northern cardinal (*Cardinalis cardinalis*), Carolina chickadee (*Parus carolinensis*), tufted titmouse (*Parus bicolor*), mourning dove (*Zenaida macroura*), northern bobwhite (*Colinus virginianus*), western scrub jay (*Aphelocoma coerulescens*), rufus-crowned sparrow (*Aimophila ruficeps*), turkey vulture (*Cathartes aura*), and other common bird species. Common reptiles and amphibians in the area include the Gulf

Coast toad (*Bufo valliceps*), Texas earless lizard (*Cophosaurus texanus*), ground skink (*Scincella lateralis*), Texas rat snake (*Elaphe obsoleta*), Texas patchnose snake (*Salvadora grahamiae*), and flathead snake (*Tantilla gracilis*). It is anticipated that population levels of wildlife species on the Property are similar to other ranchland across Bexar County and central Texas.

3.3 Threatened or Endangered Species

Presently there are eleven federally listed species that occur in Bexar County, two neotropical migratory songbirds and nine karst invertebrates. The eleven listed species include the following: GCWA, black-capped vireo (*Vireo atricapilla*) (BCVI), Helotes mold beetle (*Batrisodes venyivi*), Cokendolpher Cave harvestman (*Texella cokendolpheri*), Robber Baron Cave spider (*Cicurina baronia*), Madla's Cave meshweaver (*C. madla*), Government Canyon Bat Cave spider (*Neoleptoneta microps*), Government Canyon Bat Cave Meshweaver (*C. vespera*), Braken Bat Cave Meshweaver (*C. venii*), and two beetles (*Rhadine exilis* and *Rhadine infernalis*) that do not have common names.

In addition, another nine species listed as threatened, endangered, or candidate species reside in the San Marcos, Comal, Fern Bank, and Hueco springs and their associated aquatic ecosystems, and the San Antonio Segment of the Edwards (Balcones Fault Zone) Aquifer. Portions of the recharge, contributing, and artesian zones of this segment are included within Bexar County and certain activities occurring within these areas may or may not affect the quality and/or quantity of water within the Edwards Aquifer, and thereby may or may not affect these species. Seven of these species are endangered: Peck's cave amphipod (*Stygobromus pecki*), Comal Springs riffle beetle (*Heterelmis comalensis*), Comal Springs dryopid beetle (*Stygoparnus comalensis*), San Marcos gambusia (*Gambusia georgei*), fountain darter (*Etheostoma fonticola),* Texas blind salamander (*Typhlomolge rathbuni*), and Texas wild rice (*Zizania texana*). The San Marcos salamander (*Eurycea nana*) is listed as threatened. These eight species are referred to as "Edwards Aquifer Species." The Cagle's map turtle (*Graptemys caglei),* restricted almost exclusively to the Guadalupe and San Marcos rivers, may also be influenced by flows from the Edwards Aquifer and is designated as a candidate species.

There is no evidence of any threatened or endangered species other than the GCWA occurring on or adjacent to the Property (see Sections 3.3.2 and 3.3.3).

3.3.1 Endangered Migratory Songbirds

Golden-cheeked warbler

The GCWA is a small neotropical migrant songbird that breeds only in the mixed Ashe juniper-deciduous woodlands of the Edwards Plateau, Lampasas Cut-Plain, and Llano Uplift regions of central Texas (Service 1992). GCWAs generally prefer moderate to high-density areas of mature, older trees containing dense foliage in the upper canopy. A mix of mature deciduous tree species among mature Ashe juniper is ideal for GCWA habitat. Typical GCWA habitat consists of tall, dense, mature stands of Ashe juniper, also called blue berry cedar, mixed with trees such as Texas oak, Lacey oak (*Q. glaucoides*), shin oak (*Q. havardii*), live oak, post oak (*Q. stellata*), Texas ash (*Fraxinus americana*), cedar elm, hackberry (*Celtis laevigata* var. *texana*), bigtooth maple (*Acer grandidentatum*), sycamore (*Platanus occidentalis*), Texas black walnut (*Juglans microcarpa*), escarpment cherry (*Prunus serotina* var. *eximia*), and pecan *(Carya illinoensis)*. The GCWA requires the shredding bark of mature Ashe junipers (generally 30 years old and older) for nesting material and forages for insects in Ashe juniper and various deciduous tree species. Average nest height is 15 feet (4.57 meters) above ground, ranging from five (1.52 meters) to thirty-two feet (9.75 meters) above ground (Service publication, 1995, http://arlingtontexas.fws.gov/pdf/GCWA.pdf).

The areas most likely to be utilized by the GCWA consist of nearly continuous canopy cover of trees with 50 to 100 percent closed canopy (Campbell 1995). Arnold et al. (1996) found that GCWAs do not consistently occupy and reproduce in patches of less than 56 acres (22.66 hectares). However, records exist of GCWAs occupying patches of habitat as small as 12 acres (4.86 hectares) (Campbell 1995). These patches were consistently in association with larger nearby patches.

GCWAs arrive in central Texas in early March and stay through early August when they begin their migration south to the highland pine-oak woodlands of southern Mexico and northern Central America.

GCWA surveys have been conducted on portions of the Cibolo Canyon property at various times since 1995. As shown on Figure 4, these surveys have detected the presence of the GCWA across much of the Master Phase II Property. Surveys of GCWAs were conducted by Horizon in 1995, 1997, 1998, 1999, and 2004 on all or a portion of the Evans Road Tract portion of Master Phase II. In addition, in 2002 aci conducted a one-day GCWA census on the Master Phase II portion of the Evans Road Tract (aci 2002b). In 2003 and 2004, aci conducted GCWA surveys on the North Triangle Tract. Finally, in 2004 Horizon conducted GCWA surveys on portions of the Wolverton Tract. The Service has reviewed all Horizon and aci survey reports and available field data. Figure 4 is a map prepared by the Service depicting all GCWA observations from all of these survey efforts, with the observations coded both by year, and by observing party.

Black-capped vireo

Habitat evaluations conducted by Horizon and aci concluded that the vegetation of the Property lacks the requisite shrub density and shrub species regularly occupied by the BCVI (aci 2002a). No impacts to the BCVI are expected as a result of the proposed development. The Applicant has not requested take coverage for the BCVI and none would be granted by issuance of this permit.

Critical Habitat

Critical habitat has not been designated for either GCWA or BCVI. Therefore, none will be impacted.

3.3.2 Karst Invertebrates

Nine endangered karst or cave-dwelling invertebrates are known to occur in Bexar County, Texas. These nine invertebrates are known from karst geologic features (limestone formations that contain caves, sinks, fractures, and fissures) in north and northwest Bexar County. These nine invertebrates are obligate karst or cave-dwelling species. Habitat required by the nine karst invertebrate species includes subterranean spaces in karst formations with stable temperatures, high humidity, and suitable substrates (for example, spaces between and underneath rocks suitable for foraging and sheltering), and a healthy surface community of native plants and animals that provides nutrient input and, in the case of native plants, act to buffer the karst ecosystem from adverse effects.

Six karst fauna regions have been delineated within Bexar County (Veni 1994), including: Stone Oak, University of Texas at San Antonio, Helotes, Government Canyon, Culebra Anticline, and Alamo Heights. The Property is located in the Stone Oak karst fauna region whose extent is known to be inhabited by three of the nine Bexar County listed invertebrate species. The three species known to occur in Stone Oak karst fauna region and their abundances within the region are *R. exilis* (27 caves), *R. infernalis infernalis* (1 cave), and Madla's Cave meshweaver (1 cave). Master Phase II is not designated by the Service as Critical Habitat for any of the endangered karst invertebrates. Multiple karst surveys of the Master Phase II area have not revealed the presence of any endangered karst invertebrate habitat or species (Pape Dawson Engineers, Inc 2003; Horizon Environmental, Inc. 1999; Mike Warton and Associates, Inc. 2000; Mike Warton and Associates, Inc. May 2001; PBS&J2004) (see Section 3.5). Impacts to endangered karst invertebrates are not expected as a result of the proposed development.

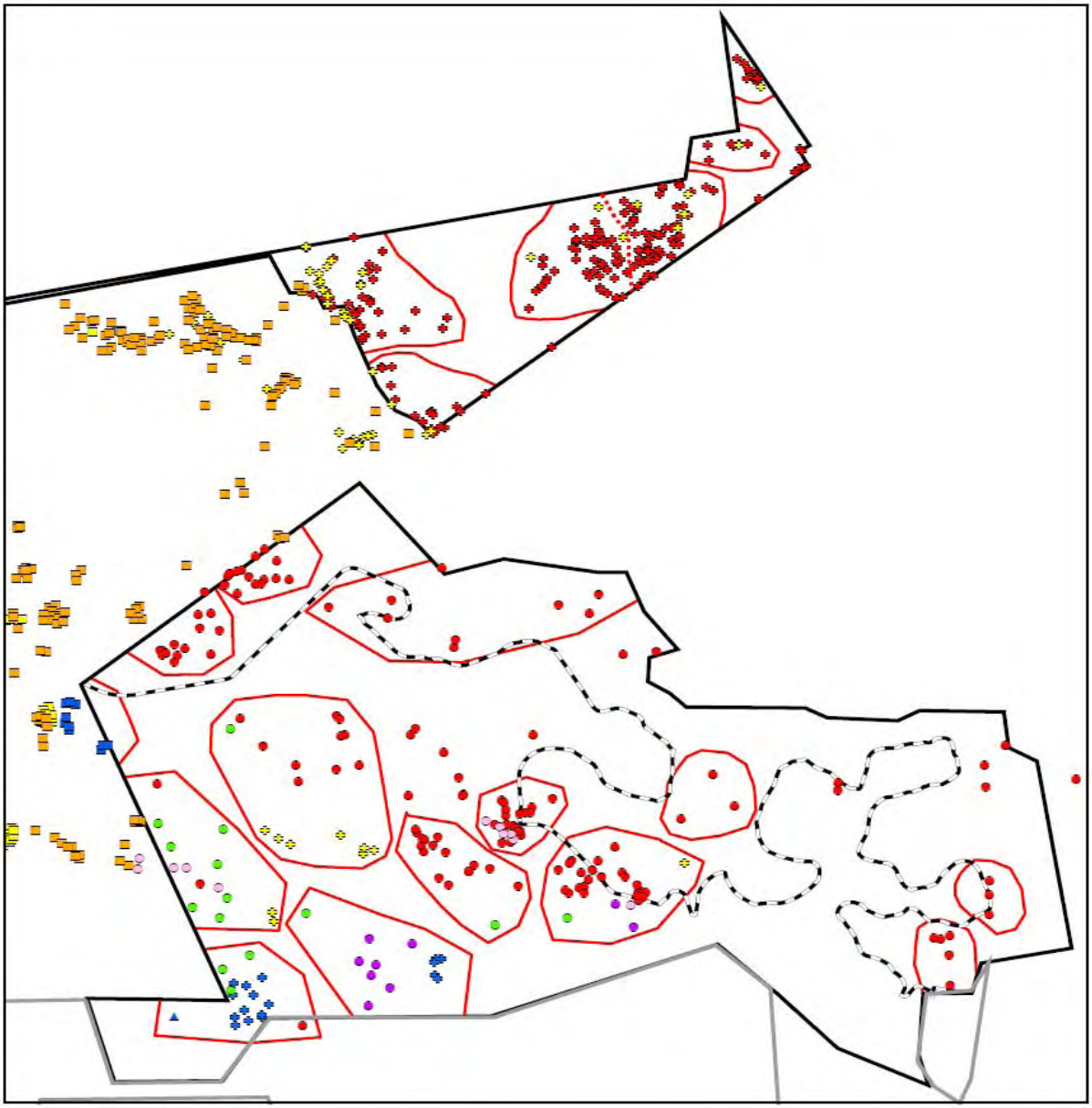


Figure 4. Cibolo Canyon GCWA survey information

The Applicant has not requested take coverage for any karst invertebrate and none would be granted by issuance of the requested permit.

3.3.3 Edwards Aquifer Related Species

Over 40 species of highly adapted, aquatic, subterranean species are known to live in the Edwards Aquifer. These include amphipod crustaceans, gastropod snails, and vertebrates like blind catfish (Longley 1986). Seven aquatic species are listed as endangered in the Edwards Aquifer system, one is listed as threatened, and one as a candidate species. The seven endangered species of the Edwards Aquifer system are the Texas blind salamander, fountain darter, San Marcos gambusia, Texas wild-rice, Comal Springs riffle beetle, Comal Springs dryopid beetle, and Peck's cave amphipod. The threatened species is the San Marcos salamander and the candidate species is the Cagle's map turtle. Critical habitat has been designated for the fountain darter, San Marcos gambusia, Texas wild-rice, and San Marcos salamander. These four species are known only from the San Marcos River in San Marcos, Texas.

Most of Master Phase I and II (approximately 2,548 acres [1031.2 hectares]) are within the designated Edwards Aquifer Recharge Zone (see discussion in 3.7.2 concerning actual recharge characteristics). The remainder of the Property (approximately 307 acres [124.2 hectares]) is within the Contributing Zone of the Edwards Aquifer. Storm-water runoff surface flows leaving the site have the probability of recharging the Edwards Aquifer.

3.4 Wetlands

The U.S. Army Corps of Engineers (USACE) defines wetlands as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (USACE 1987). A review of the National Wetlands Inventory for the Bulverde and Longhorn quadrangles did not result in locating any identified wetlands within Master Phase II. All waterways on site are ephemeral streams. No permanent water bodies are present on the Property. After reviewing the biological, archaeological, and geological information provided to them by LIC's technical design consulting team, on June 3, 2003, LIC received approval from the USACE for construction of a number of linear crossings of waters of the U.S. for construction of Cibolo Canyon Boulevard and installation of utilities in the Master Phase I area. Any crossings in the Master Phase II area will be handled in a similar manner.

3.5 Geology and Soils

According to the *Soil Survey – Bexar County, Texas* (USDA 1991), Tarrant association, rolling (TaC), and Tarrant association, hilly (TaD) are two soil units present on site. The Tarrant series consists of stony soils that are very shallow, dark colored and gently undulating to steep. The soils consist of 5 to 12 inches (12.7 – 30.5 centimeters) of calcareous clay to clay loam containing many limestone fragments, overlying 7 to 12 inches (17.8 – 30.5 centimeters) of fractured limestone containing fine earth in interstices over fractured limestone. The permeability of Tarrant series soils is 1.0 to 1.5-inches per hour (2.54 – 3.79 centimeters per hour). Tarrant soils are characterized by poor, practically impervious drainage and have moderate to no susceptibility to erosion (USDA 1991).

Onsite geologic mapping indicates that Master Phase II is underlain by the Kainer Formation of the Edwards Group and the upper member of the Glen Rose Formation. The Property, with the exception of the majority of the North Triangle Tract, is within the Texas Commission on Environmental Quality (TCEQ) officially mapped area of the Edwards Aquifer Recharge Zone. The Kainer formation is

approximately 310 feet (94.5 meters) thick. The lithology of the Kainer Formation includes marine sediments consisting of fossiliferous mudstones and wackestones that grade upward into dolomitic mudstones and evaporites, terminating at a miliolid grainstone (Stein and Ozuna 1995).

The Kainer Formation (Kek) is divided into the grainstone member (Kekg), the kirschberg evaporite member (Kekk), the dolomitic member (Kekd), and the basal nodular member (Kekbn) (Stein and Ozuna 1995). Pape-Dawson on-site geologic mapping and mapping by Stein and Ozuna (1995) indicate the Kekd is exposed over most of the site north of the Bat Cave Fault (see Figure 5). The Kekbn is exposed in valleys and the Kekk is exposed on some hilltops.

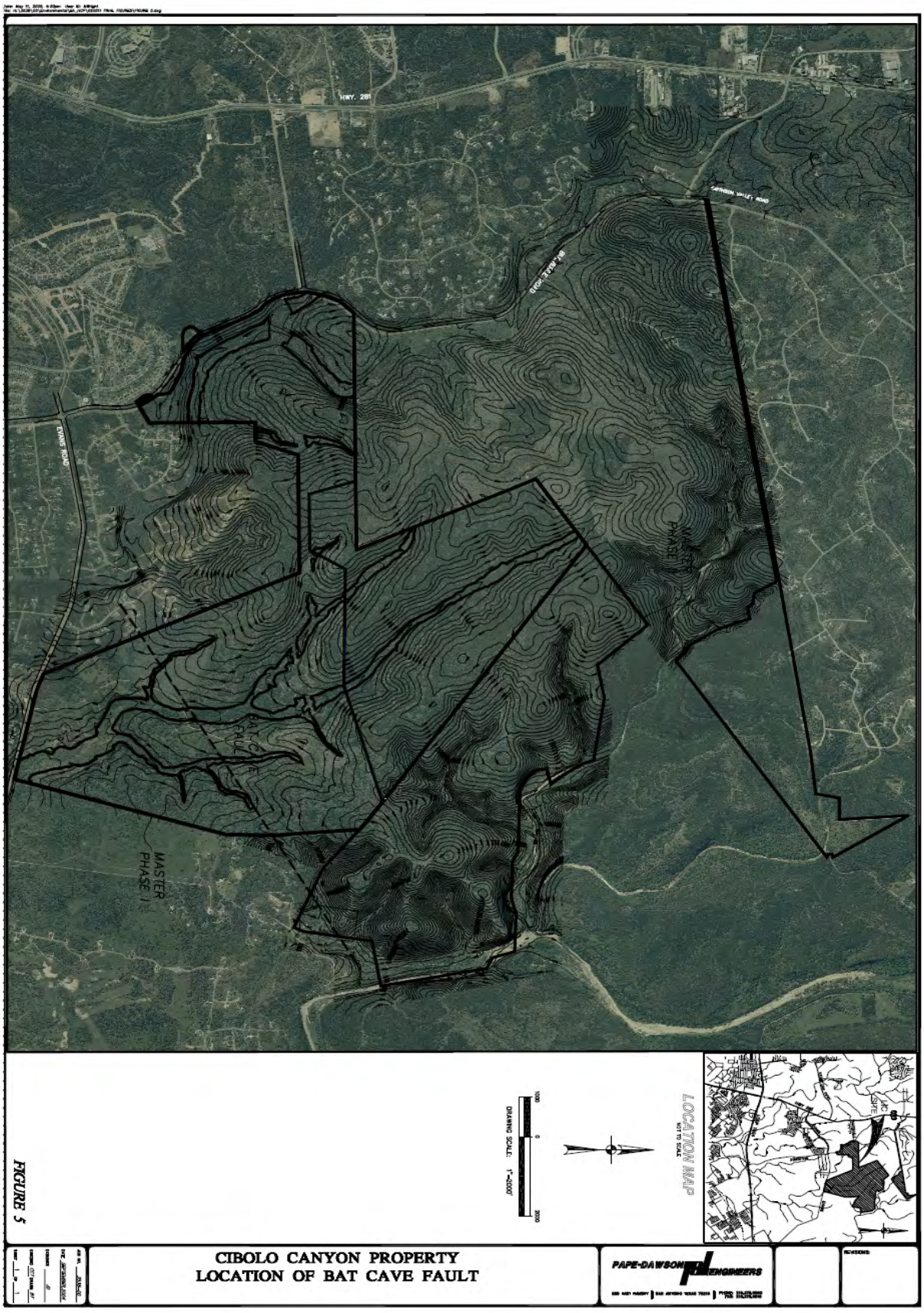
Pape-Dawson mapping in Bexar County has revealed that karst in the Kainer Formation is generally characterized by few, small sinkholes and caves formed as shafts. However, horizontal cave development also occurs. The Person Formation is generally characterized by large, broad, shallow sinkholes and lateral cave development, although vertical caves are not uncommon.

The upper member of the Glen Rose formation (Kgru) is a yellowish-tan, thinly bedded limestone and marl and is approximately 480 feet (146.3 meters) thick (Stein and Ozuna 1995). Pape-Dawson on-site geologic mapping, and mapping by Stein and Ozuna (1995) indicates the Kgru underlies the Kek, and is exposed in deeply incised valleys on the Wolverton and North Triangle Tracts. Karst in the Kgru is generally characterized by lateral cave development with some vertical shafts.

The upper member of the Glen Rose Formation (Kgru) underlies the Edwards Group. Onsite water wells indicate that, with the possible exception of some areas in Master Phase I south of the Bat Cave Fault, the Edwards Group is not saturated on-site. Surface water infiltration passes down through the Edwards Group rock and recharges the underlying Upper Trinity Aquifer within the Kgru. Onsite geologic mapping by Pape-Dawson indicates some on-site springs discharge from perched water zones in the Kgru below the Edwards Group. These springs are identified on the TCEQ Edwards Aquifer Recharge Zone map of the Bulverde, Texas quadrangle.

Geologic mapping of the Evans Road Tract and 250 acres (101.2 hectares) of the Wolverton Tract, which includes Master Phase I and Master Phase II, has been conducted by Pape-Dawson Engineers, Inc. No geologic surveys or mapping has been completed for the north Triangle tract. However, under the proposed habitat conservation plan, this area will be preserved and therefore no impacts are expected. These areas were studied as a whole and therefore are being summarized here in their entirety rather than based solely on the limits of Master Phase I or Master Phase II. During the review and evaluation of Master Phase I, a report entitled “Summary of Karst Feature Evaluation” dated June 2003 was submitted to the Service. In the July 3, 2003, response letter, the Service concurred based on the Karst Feature Evaluation that there is no information that indicates that the karst invertebrates are present on Master Phase I. Since the supporting documentation also addressed Master Phase II, a brief summary of the information is included herein.

Field methods utilized to identify and evaluate potential karst features were intended to meet both the Service draft protocols (Versions May 8, 2000; April 8, 2001; and May 23, 2001) for identifying karst features and the TCEQ criteria for Geologic Assessments on the Edwards Aquifer Recharge Zone. A total of 330 geologic features were mapped, which included 142 non-karst features such as fault zones, fractured rock outcrops, stream scours, and water wells. One hundred-eighty-one geologic features and 99 non-karst features were located within Master Phase I, and 149 geologic features and 43 non-karst features were located within the Property. The investigations revealed the presence of 188 possible karst features on site. Excavation of 185 of these possible karst features revealed that the features rapidly


HWY. 281
EVANS ROAD
BLANCO ROAD
CAMPHOR VALLEY ROAD
MASTER PHASE II
MASTER PHASE I
DRAWING SCALE: 1"=2000'
LOCATION MAP
NOT TO SCALE
FIGURE 5
CIBOLO CANYON PROPERTY
LOCATION OF BAT CAVE FAULT
PAPE-DAWSON ENGINEERS

constricted, had well developed soil horizons with compact clay at depth or exhibited no airflow. No habitat suitable for karst invertebrates was encountered at any of these 185 features.

In accordance with the above-referenced protocols and methodology, excavation was performed by hand until encountering a cave, solid bedrock with no portals, packed clay with no airflow present, potential archaeological or paleological materials, or where continued excavation would be dangerous. No mechanical equipment was used. One of the three remaining karst features is an open cave known as Elm Waterhole Cave (located within Master Phase I). The two remaining features were excavated into voids large enough to enter. One of the features is 'cave-sized', was named Stein Cave, and is located within the Property. The other feature is smaller than a cave, was called Peanut Sink, and is located within Master Phase I.

Biological karst invertebrate collections performed by Warton & Associates did not reveal the presence of any endangered species in any of the three features entered. All other identified karst features were determined to not provide suitable habitat for federally listed species, and were therefore not surveyed. A summary of investigations and a report of findings were included in the Karst Feature Summary previously evaluated by the Service. Summary details regarding Stein Cave, the karst feature located within the Property, are included herein and taken from the Karst Feature Summary.

As described in detail in the Karst Feature Summary, Stein Cave was originally identified as a 6.0 foot (1.83 meter) diameter sinkhole at the base of a large mature oak tree. Removal of undergrowth and surface materials revealed a bedrock level and a vertical solutioned rock joint opening of approximately 3 feet (.915 meters) long by 15 inches (38.1 centimeters) wide. The initial infilling was composed of dark gray clay soil mixed with a profusion of tree roots. Gradually the solid solutioned walls of a vertical shaft began to become exposed, and at approximately 3 feet down on the north end of the joint, a drainage portal that issued cool airflow conductivity was revealed. Further excavations indicated that at approximately the 10.5-foot (3.2 meters) depth, the flooring sloped off to the southeast to a solid wall and a low partially open bedding plane space. The bedding plane room measured 30 feet (9.15 meters) long by 15 feet (4.6 meters) wide with a long valleyed trough in the floor. No drain portals of any kind were present and semi-clay covered areas are evidence that very little water (if any) moves across it. No other extents were found. The bedding room was found to be completely void of any life forms.

3.6 Land Use

Current land use on the Property consists of ranchland, livestock grazing, and seasonal hunting along with management for conservation and preservation of not only game and non-game species, but for species of concern in the area as well.

Master Phase II lies within the northern portion of Bexar County in the extraterritorial jurisdiction of COSA and is largely surrounded by existing developments. Some of these existing developments are currently built out, while others are actively under construction or nearing initial groundbreaking. These developments include Clear Springs Park, which borders the Property to the north, and Encino Park and Sendero Ranch to the west and northwest. Also, immediately to the northwest is the Indian Springs property, which is a major, small lot subdivision that is presently under construction. Fossil Creek and Fossil Ridge are existing subdivisions to the south and southwest. Century Oaks Golf Community is to the east, as are other large-lot and so-called "ranchette" properties to the southeast. Several other large ranchette properties are located along the border of the Property to the east and northeast.

3.7 Water Resources and Water Quality

3.7.1 Surface Water

No perennial streams or water bodies are located on site (USGS Bulverde Quadrangle Map). Surface water flow occurs only briefly during and after rainfall events. The West Fork of Cibolo Creek and Cibolo Creek border the eastern side of the Wolverton Tract. Runoff from the North Triangle and Wolverton Tract culminate in Cibolo Creek. Runoff from the Evans Road portion of the Property enters an unnamed tributary to Elm Waterhole Creek. No permanent water bodies are present on the Property.

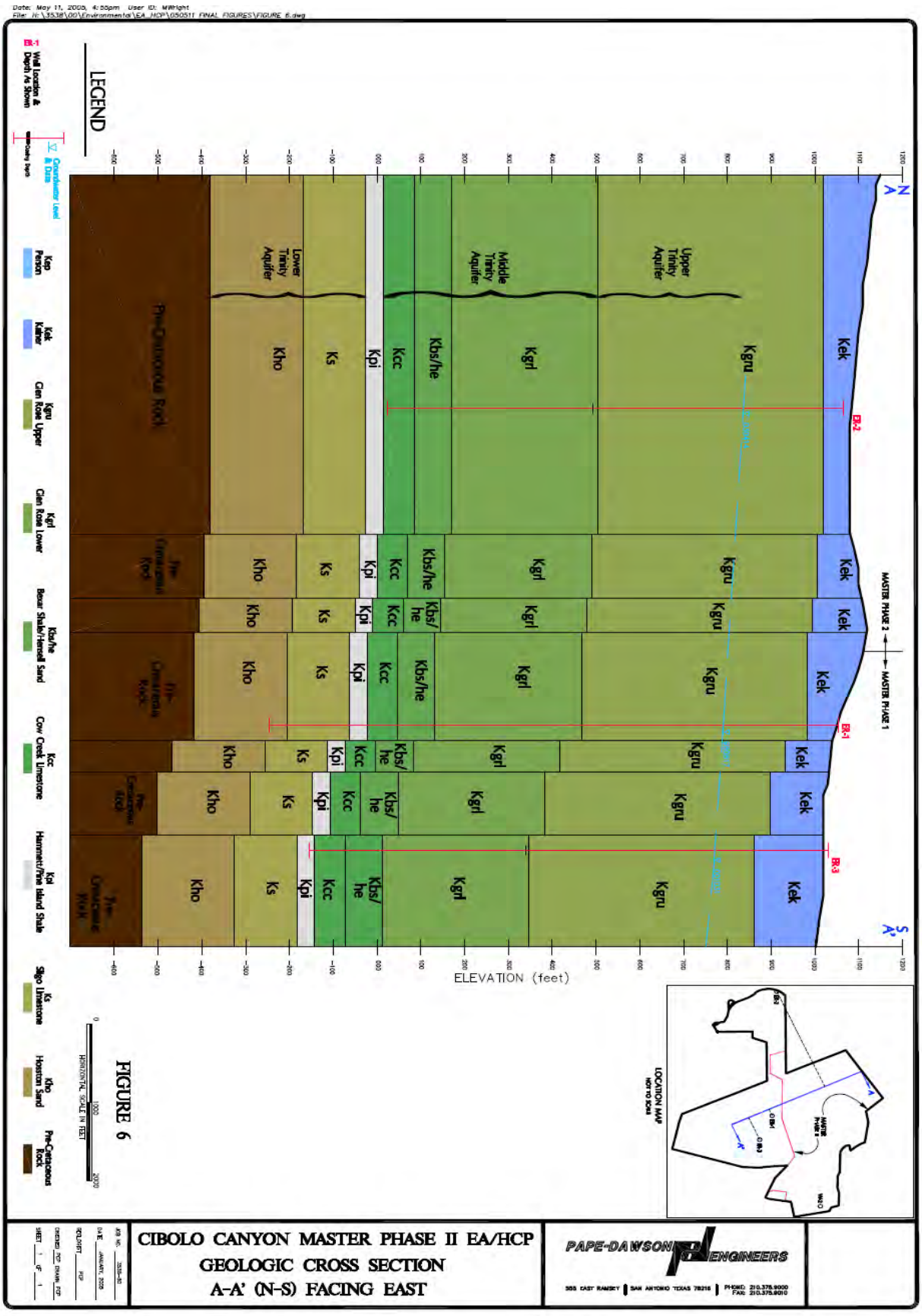
No surface water quality problems are known to exist on-site. The closest receiving water on the State of Texas 1999 Clean Water Act Section 303(d) list is approximately 6.5 miles (10.46 km) downstream of the site. The Mid Cibolo Creek and Upper San Antonio River stream segments will receive water downstream of the site and are on the 303(d) list. These segments are on the list due to low dissolved oxygen concentration (Mid Cibolo) and bacteria levels exceeding criterion established to assure the safety of contact recreation (Upper San Antonio).

3.7.2 Groundwater

Six water wells have been drilled on-site and completed with draw from the Middle Trinity Aquifer. The water quality produced is generally good, but exhibits a hydrogen sulfide odor when initially exposed to air and has fluoride concentrations slightly in excess of primary drinking water standards in some wells.

Figure 6 is a cross section of the subject property showing stratigraphic and hydrogeologic units and the groundwater levels measured in water wells drilled onsite. Based on geophysical logs of water wells drilled on-site by Pape-Dawson, groundwater depth varies at the Property but is generally at least 150 feet (45.7 meters) deep. The first water bearing unit is the upper member of the Glen Rose Formation or Upper Trinity Aquifer. The deeper lower member of the Glen Rose Formation and Cow Creek Limestone make up the Middle Trinity Aquifer. Deeper yet are the Sligo and Hosston Members of the Travis Peak Formation that make up the Lower Trinity Aquifer (Ashworth 1983). No water bearing Edwards Aquifer unit exists within the Property because the Edwards Group rocks exposed at the ground surface are not saturated. Therefore, water that infiltrates on-site recharges the Upper Trinity Aquifer, not the Edwards Aquifer.

Groundwater recharge occurs primarily in streambeds (Metcalf and Eddy 1979). Preservation of open space, floodplains, creek buffers, and sensitive geologic features within these areas will prevent significant losses of recharge to the Upper Trinity Aquifer. Studies have been conducted that identify evidence that some groundwater movement from the Upper and Middle Trinity Aquifer to the Edwards Aquifer occurs in some areas across faults (George 1947, 1952; Small 1986; Veni 1997; Edwards Underground Water District Report 95-03 (hereafter referred to as EUWD Report 95-03). Movement of some groundwater from the upper member of the Glen Rose Formation to the Kainer Formation of the Edwards Group may or may not occur across the Bat Cave Fault. The location of the fault as mapped by Pape-Dawson and Stein and Ozuna (1995) is presented on Figure 5. Recharge from the Glen Rose Formation to the Edwards Aquifer within the entire San Antonio Segment of the Edwards Aquifer is estimated to be probably less than 2 percent of the total recharge (EUWD Report 95-03). The EUWD Report 95-03 references cross sections by Small (1986) through the Edwards Aquifer Recharge Zone (EARZ) that show areas in which faulting juxtaposes the Glen Rose Formation of the Trinity Aquifer and Edwards Group in the subsurface. These cross sections, water levels, and aquifer transmissivities were used to estimate the volume of flow across faults from the Glen Rose Formation to the Edwards Aquifer. A six-mile (9.65 km) length of faulting in the area of the Property was estimated to transfer between 97


LEGEND
Well Location & Depth As Shown
Groundwater Level & Date
Kap Person
Kek Kainer
Kgru Glen Rose Upper
Kgrl Glen Rose Lower
Kbs/he Bexar Shale/Hensell Sand
Kcc Cow Creek Limestone
Kpi Hammett/Pine Island Shale
Ks Sligo Limestone
Kho Hosston Sand
Pre-Cretaceous Rock
Lower Trinity Aquifer
Middle Trinity Aquifer
Upper Trinity Aquifer
Pre-Cretaceous Rock
Kho
Ks
Kpi
Kcc
Kbs/he
Kgrl
Kgru
Kek
BX-1
BX-2
BX-3
MASTER PHASE 2
MASTER PHASE 1
N
A
S
A'
ELEVATION (feet)
LOCATION MAP
NOT TO SCALE
HORIZONTAL SCALE IN FEET
0
1000
2000
FIGURE 6
CIBOLO CANYON MASTER PHASE II EA/HCP
GEOLOGIC CROSS SECTION
A-A' (N-S) FACING EAST
PAPE-DAWSON ENGINEERS
255 EAST RAMSEY | SAN ANTONIO TEXAS 78216 | PHONE: 210.375.9000 FAX: 210.375.9010

and 351 acre-feet of water per year from the Glen Rose to the Edwards (EUWD Report 95-03). Total recharge from surface water to the San Antonio segment of the Edwards Aquifer is approximately 794,070 acre-feet averaged over the last 10 years. This means that an equivalent of approximately 0.01 percent to 0.04 percent of total recharge in the San Antonio segment of the Edwards Aquifer might occur from the Glen Rose Formation of the Trinity Aquifer to the Edwards Aquifer in the area of Bexar County, within which the Property is located.

However, a recent detailed investigation conducted by SAWS on the "bad-water" line of the Trinity Aquifer suggests that faults between the Trinity Aquifer and Edwards Aquifer may be barriers to flow in Bexar County and in the area of the site. Mr. Alvin Schultz, consultant for SAWS, presented data at the November 12, 2003, meeting of the South Texas Geologic Society that indicate there is an approximately 40-foot (12.2 meter) difference in the potentiometric groundwater levels between the Trinity Aquifer and Edwards Aquifer in the vicinity of the Property. This difference in water levels was interpreted by Mr. Schultz as a possible indication that faults between the aquifers are barriers to flow. Mr. Schultz's detailed investigation also indicated that if groundwater flow from the Trinity Aquifer to the Edwards Aquifer was occurring, the water transferred was naturally occurring, poor quality water with elevated concentrations of dissolved solids and sulfates.

3.8 Air Quality

The Metropolitan Planning Organization (MPO) addresses the expected impacts of increased population and transportation needs on Bexar County's air quality. At the time of the study, the San-Antonio Bexar County area was considered by TCEQ as being in "near non-attainment" with the National Ambient Air Quality Standards (NAAQS). To date, San Antonio still holds near non-attainment status for ground-level ozone. Although San Antonio is in compliance with the one-hour ozone standard, it exceeds the eight-hour standard (TCEQ 2004). The Air Improvement Resources Committee (AIRC) of the Alamo Area Council of Governments prepared a Clean Air Plan for the San Antonio Metropolitan Statistical Area. The Plan is designed to enable a local approach to ozone attainment and to encourage early emission reductions that will help keep the San Antonio area in attainment of the 1-hour ozone NAAQS and ensure attainment of the 8-hour ozone NAAQS. The Clean Air Plan also incorporates the Early Action Compact for the San Antonio area. The Early Action Compact protocol was endorsed by Environmental Protection Agency (EPA) Region 6 on June 19, 2002, and is designed to develop and implement control strategies, account for growth, and achieve and maintain the 8-hour ozone standard (AIRC 2002). Attainment with the 8-hour ozone standard is scheduled no later than December 31, 2007. Non-attainment designation will be deferred as long as all milestones and commitments are met. The Cibolo Canyon Property is located in an area of projected growth by MPO and would be subject to all standards of the EPA and the Early Action Compact.

3.9 Cultural Resources

In 2003, LIC's archaeological consultants conducted a cultural resources investigation and survey of the entire Cibolo Canyon Property. The archeological team was lead by principal investigator Sean R. Nash, Registered Professional Archaeologist of Archaeological and Cultural Sciences Group. A records search was conducted at the Texas Archeological Research Laboratory and the Texas Historical Commission's Texas Archeological Sites Atlas to locate any previously recorded historic and prehistoric cultural resources within the project area. Previous to the 2003 archaeological survey, there were no recorded archaeological sites within the Cibolo Canyon Property. The 2003 cultural resources survey efforts discovered fourteen archaeological sites within Master Phase I and eleven archaeological sites within Master Phase II. None of the newly recorded sites are eligible for nomination as a State Archeological Landmark or to the National Register of Historic Places. The full text of the report (2003) is on file with the Service (Austin Ecological Services Field Office).

Sites 41BX1547, 41BX1548, and 41BX1549 are located within the easternmost portion of the Wolverton Tract.

Site 41BX1547 is a lithic scatter located on an upland knoll overlooking the Cibolo Creek flood plain. The lithic scatter covers approximately 11 acres (4.45 hectares). However, the artifact density varies with elevation. The bulk of the artifacts are located along limestone shelves exposed on the slope of the knoll. The artifact scatter extends around the perimeter of the knoll at approximately the same elevation. Between the shelves, the scatter dissipates.

The knoll is heavily eroded. Limestone outcrops are common, and soils are thin to non-existent. Large limestone fragments, some boulder size, are numerous on the surface. A recently cut road encircles the knoll. This road marks the lowest extent (i.e., elevation) of the scatter.

Artifacts observed at the site include crude bifaces/preforms, crude unifaces, chert cores, primary flakes, secondary flakes, and a few tertiary flakes. One diagnostic artifact, an Early Archaic Guadalupe tool, was collected from the surface. No projectile points or cultural features were observed.

The site appears to be a lithic procurement/lithic reduction site. The presence of crude bifaces/preforms, primary and secondary flakes, and chert cores suggest early-stage lithic reduction. However, cultural deposits are surficial and are mixed and resting on the surface, so separating discrete occupations is improbable.

The cultural deposits have been heavily disturbed by erosion and land clearing activities associated with the cut road. The site has very little research value and does not warrant further investigation.

Site 41BX1548 is located on an upland knoll immediately west of site 41BX1547. The site consists of a lithic scatter that covers approximately 13 acres (5.26 hectares). Like site 41BX1547, the artifact density varies with elevation.

The knoll is heavily eroded. Soils are thin to non-existent, and limestone outcrops are common. Large limestone fragments, some boulder size, are numerous on the surface. The knoll has been heavily disturbed by land clearing activities. A cut road and several bulldozer paths cross the knoll. Recent clearings and associated bulldozer push piles were observed throughout the site.

Artifacts observed at the site include crude bifaces/preforms, crude unifaces, chert cores, primary flakes, secondary flakes, and a few tertiary flakes. No diagnostic artifacts or cultural features were observed.

The site appears to be a lithic procurement/lithic reduction site. The presence of crude bifaces/preforms, primary and secondary flakes, and chert cores suggest early-stage lithic reduction. No cultural features or diagnostic artifacts were observed. The site has been heavily disturbed by erosion and land clearing activities, and cultural deposits are surficial with components mixed and resting on the surface. Separating discrete occupations is improbable. Because the site is heavily disturbed and surficial and lacks diagnostic artifacts, it has very little research value and does not warrant further investigation.

Site 41BX1549 is located on an upland knoll immediately south of site 41BX1548. The site measures approximately 656.2 feet (200 meters) in diameter and consists of a sparse lithic scatter. Much of the site has been disturbed by land clearing activities and ranch road construction. The area also appears to be frequently used for hunting. A hunters' camp is located at the eastern boundary of the site, and a ranch road cuts through the western portion of the site.

Cultural materials include bifaces, biface thinning flakes, chert debitage, tertiary flakes, and one projectile point. The projectile point is very similar to a Gary preform, and may suggest a Middle Archaic occupation. However, because no other diagnostic artifacts were found and the cultural deposits are mixed and resting on the surface, separating discrete components is highly improbable. No cultural features were observed.

The site is a sparse, surficial lithic scatter that has been disturbed by erosion, ranch road construction, and land clearing activities. Modern hunting and camping activities have also disturbed a portion of the site. Only one possible diagnostic was found during the pedestrian survey. It is a Gary-like projectile point preform that could date to the Middle Archaic period. No other diagnostics were found. It is possible that the site has been surface collected by hunters and campers, due to the close proximity of modern fire rings and hunting blinds. The site is also heavily eroded. Bedrock is exposed over much of the site, and the soils are thin to non-existent. Many of the artifacts have likely been displaced by sheet wash. Because of the disturbed, surficial nature of the cultural deposits, separating discrete components is unlikely. The site has very little research value and does not warrant further investigation.

Sites 41BX1553, 41BX1554, 41BX1559, 41BX1568, and 41BX1569 are located within the Evans Road Tract.

Site 41BX1553 is a sparse lithic scatter located in a ridge top clearing in the northernmost portion of the Evans Road Tract. The site is approximately 328.1 feet (100 meters) (northeast-southwest) x 656.2 feet (northwest-southeast) and is strictly surficial (i.e., bedrock is exposed over the majority of the surface).

Cultural materials include chert debitage, chert cores, and crude bifaces. No diagnostic artifacts or cultural features were observed.

Based on the presence of chert cores and crude bifaces, the site may be an early-stage lithic reduction/tool manufacturing site. However, the site is heavily deflated and lacks diagnostic artifacts or cultural features. The cultural deposits are sparse and surficial and have been heavily eroded by sheet wash. Due to disturbances and lack of diagnostics, the site has very little research value and does not warrant further investigation.

Site 41BX1554 is a sparse, surficial lithic scatter located at the head of a draw that feeds West Fork Creek. The site is approximately 32.8 feet (10 meters) (northwest-southeast) x 98.4 feet (30 meters) (northeast-southwest) and is strictly surficial (i.e., bedrock is exposed over the majority of the surface). The cultural materials are confined to a shallow wash, which is bounded by thick cedar breaks.

Cultural materials include chert debitage, bifaces, and an unidentified projectile point. The projectile point has a bifurcated stem and is similar to Archaic-period projectile points. However, it has not been formally typed. The cultural deposits are surficial and highly disturbed. For this reason, the site has very little research value and does not warrant further investigation.

Site 41BX1559 is a surficial lithic scatter located on an upland ridge in the westernmost portion of the Evans Road Tract, in the “duck neck” portion of the Cibolo Canyon Property. The site measures approximately 328.1 feet (north-south) by 656.2 feet (east-west) and is bounded by an east-west oriented barbed wire fence to the south. Soils at the site are thin to non-existent, and numerous bedrock outcrops and large limestone fragments are common on the surface. Limestone shelves are exposed along the ridge slopes.

Cultural materials include 2 bifaces, 1 utilized/modified flake, and numerous pieces of chert debitage. No diagnostic artifacts or cultural features were observed. A random 1-x-1-m collection square contained 10

chert flakes and 2 bifaces (one is crude, and one is finely flaked). No shovel tests were executed due to the thin soils and exposed bedrock.

The site is a heavily deflated, surficial scatter of chert flakes and bifaces. The site has little to no depth, and the artifact distribution is sparse. No diagnostic artifacts or cultural features were observed. The site has very little research value and does not warrant further investigation.

Site 41BX1568 is located approximately 1,476.5 feet (450 meters) west of site 41BX1553 on the same ridge. A ranch road cuts through the southern portion of the site. The site measures approximately 32.8 feet (northwest-southeast) by 65.6 feet (northeast-southwest) and is located entirely within an upland wash.

Artifacts include an unidentified projectile point, a biface fragment, a Guadalupe tool, and several chert flakes. The Guadalupe tool suggests an Early Archaic occupation. One shovel test was executed at the site to characterize the subsurface deposits. The shovel test contained no artifacts. The surficial and heavily eroded nature of the cultural deposits makes separating discrete components highly unlikely.

The site is a sparse, surficial lithic scatter located entirely within an upland wash. The site has been heavily eroded by slope wash and contains few diagnostics. No cultural features were observed. The site has very little research value and does not warrant further investigation.

Site 41BX1569 is a small lithic scatter located on an upland ridge at the northern boundary of the Evans Road Tract, approximately 1,069.6 feet (326 meters) north of site 41BX1568. An east-west oriented fencerow marks the northern boundary of the site. The scatter measures approximately 131.2 feet (40 meters) in diameter and is strictly surficial. Soils at the site are thin to non-existent. Cobble to boulder-size limestone fragments cover the surface, and bedrock outcrops are common. The surface is heavily deflated. Slope wash has scoured portions of the site to bedrock, and limestone shelves are exposed along the ridge slopes.

Cultural materials include several chert flakes and a biface. No diagnostic artifacts or cultural features were observed. Because of the surficial nature of the site, no shovel tests were conducted

The site has been disturbed by slope wash and contains no diagnostic artifacts. No cultural features were observed. Due to the disturbances, surficial nature of the artifacts, and the lack of diagnostic artifacts, the site has very little research value and does not warrant further investigation.

Sites 41BX1561, 41BX1565, and 41BX1566 are located within the North Triangle Tract.

Site 41BX1561 is located on an upland ridge near the center of the tract. The site measures approximately 32.8 feet in diameter and consists of a sparse, surficial scatter of chert flakes and bifaces. Land clearing, ranch road construction, and erosion have significantly disturbed the site. No diagnostic artifacts or cultural features were observed. Because of the disturbances, the surficial nature of the cultural deposits, and the lack of diagnostic artifacts, the site has very little research value and does not warrant further investigation.

Site 41BX1565 is a sparse lithic scatter located on the south bank of Clear Springs Fork Creek, immediately west of the confluence of Clear Springs Fork Creek and an unnamed tributary. The scatter is approximately 328.1 feet wide and extends for approximately 984.3 feet (300 meters) along the Clear Springs Fork Creek channel. A ranch road bisects the site.

Soils at the site are thin to nonexistent with many areas containing exposed bedrock. The creek valley has been heavily disturbed by land clearing activities, ranch road construction, and brush fires. Some portions of the site have been scraped to bedrock.

The scatter is concentrated in a thin wooded strip along the south bank of the creek. Several chert flakes and a few fire-cracked limestone rocks were observed adjacent to the creek channel and ranch road. A Darl projectile point and possible Angostura projectile point basal fragment were collected near the creek, west of the ranch road. The projectile point and point fragment suggest Early and Late Archaic occupations. A biface medial fragment and several chert flakes were also observed at the eastern edge of the site, east of the main ranch road.

Three shovel tests were executed at the site to characterize the subsurface deposits. One of these shovel tests contained three chert flakes at 0-7.9 inches (0-20 centimeters) below surface. At 20 inches below surfact, degrading bedrock was exposed. The remaining shovel tests contained no artifacts. Degrading bedrock was exposed at approximately 7.1-7.9 inches below surface in the negative shovel tests. The site was carefully searched for cultural features, but none were found. The cultural deposits at the site are surficial and have been highly disturbed by land clearing and ranch road construction. For this reason, the site has very little research value and does not warrant further investigation.

Site 41BX1566 is a small lithic scatter located on a rock terrace on the north bank of Clear Springs Fork Creek. The scatter is approximately 50 m in diameter and is located directly across the creek from site 41BX1565. The site has been heavily disturbed by land clearing activities and brush burning. Numerous bulldozer push piles and recently burned brush piles were observed along the terrace. The soils at the site are thin to non-existent. Many areas have also been scraped to bedrock. The terrace is outside the limits of creek deposition, so no alluvial deposits were encountered. The majority of the sediments appear to be colluvial.

Cultural materials include chert cores, debitage, biface fragments, crude bifaces, utilized/modified flakes, burned rocks, and one projectile point preform. The majority of the artifacts were found associated with recently burned bush piles. No diagnostic artifacts were found, and no cultural features were observed.

Two shovel tests were executed at the site. One shovel test contained 2 flakes at 0-7.9 inches below surface and 3 burned rocks and one burned flake at 7.9-15 inches below surface (20-38 centimeters). However, degrading bedrock fragments were exposed at 6.7 inches (17 centimeters) below surface. The second shovel test contained one small flake at 0-6.7 inches below surface. Degrading bedrock was encountered at 6.7 inches below surface. Both shovel tests contain highly disturbed, mixed materials. No intact cultural strata were encountered. Because of the disturbances and sparse nature of the site, it has very little research value and does no warrant further investigation.

3.10 Socioeconomic Environment

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, mandates that federal agencies identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of programs on minority or low-income populations. Current development near the Property consists of middle to upper middle-class homes. No minority or low-income individuals are present on the Property, nor would any minority or low-income individuals be displaced or disadvantaged by the proposed development.

In 2000, the greater San Antonio area, which includes the extra-territorial jurisdiction, grew at an annual rate of 2.24 percent; 2001 population numbers for the area were 1.64 million, up from 1.3 million in 1990. Bexar County, in which the Property lies, had steady growth in the 1990s in the range of 1.2 percent to

2.3 percent per year; 2001 population in the county (outside San Antonio city limits) was 1.46 million, up more than 25 percent since 1990, when the population was 1.16 million (City of San Antonio Planning Department).

Military, service, telecommunications, trade, tourism, and construction are the primary employment sectors according to the COSA Planning Department. Primary employers in the greater San Antonio area include USAA, HEB grocery stores, SBC Communications, West Telemarketing, and military. Unemployment in 2003 stood at 4.8 percent in the greater San Antonio area. Residential real estate trends paralleled growth and employment statistics with a median home price of $90,400 in 1999.

4.0 ALTERNATIVES CONSIDERED FOR THE PROPERTY

With the exception of the "No Action" Alternative, common elements run through consideration of alternative plans. These common elements include the following:

- Cibolo Canyon Boulevard is part of the regional transportation plan for this region of Bexar County and all plans seek to accommodate its routing through the Property;
- City Public Service, the municipally-owned San Antonio electric and gas utility, plans an electric transmission line along the east boundary of the site, including a substation site as shown on various figures;
- Major access will be provided from Evans Road on the south and from Bulverde Road on the west;
- Although Master Phase I is not included in the HCP, the plan for development of which is largely independent of Master Phase II, Phase I impacts will be addressed in the indirect and cumulative impacts sections of the EA.

Pursuant to ESA section 10(a)(2)(iii), following is a description of "what alternative actions to such taking the Applicant considered and the reasons why such alternatives are not being utilized."

4.1 Alternative One – Proposed Alternative: Mixed-use residential and commercial community with Golf Village, with On-site and North Triangle as Mitigation Land

The Proposed Alternative (preferred alternative) is the issuance of a permit under section 10(a)(1)(B) of the ESA to authorize the incidental take of the GCWA during the development, construction, and occupation of Master Phase II, as described below. The proposal for the use of the Property, as shown on preliminary master plan in Figure 7, is to construct a residential mixed–use community with a golf-resort component. Impervious cover will be 15 percent or less. In the Property, all development would occur within an envelope containing approximately 846 acres (342.4 hectares) ("Development Area"), and an additional 760 (307.6 hectares) acres will be preserved in perpetuity for conservation of the GCWA ("Conservation Area").

Of the above totals, the Property will include 260 acres (105.2 hectares) of single-family residential development of which approximately 40 acres (16.2 hectares) are planned to be homes on small lots and 220 acres are planned to be larger 'estate-type' lots with the residential total likely not exceeding 500 lots in the aggregate. There will be approximately 550 acres (222.6 hectares) dedicated to golf, resort and related uses which will include 21 golf holes, 45 acres (18.2 hectares) for the hotel and clubhouse complex, and 40 acres (16.2 hectares) of high intensity residential uses such as town homes, condos, vacation timeshare units, or patio homes. The balance of the Property, approximately 800 acres (323.8 hectares), will be open space, floodplain, and connecting roads.

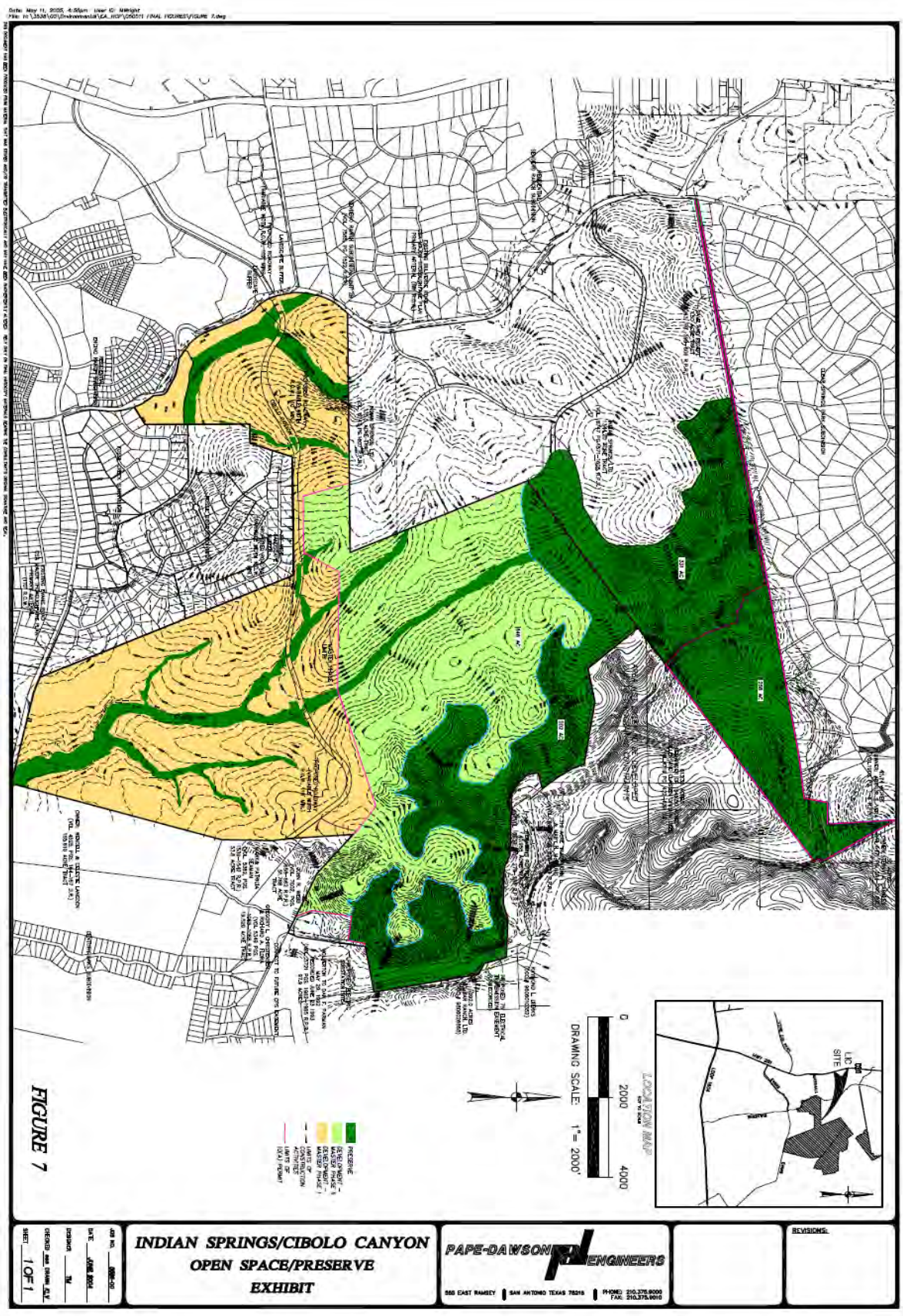


FIGURE 7
INDIAN SPRINGS/CIBOLO CANYON
OPEN SPACE/PRESERVE
EXHIBIT
PAPE-DAWSON ENGINEERS
DRAWING SCALE: 1" = 2000'
0
2000
4000
LOCATION MAP
LIC SITE
REVISIONS:
SHEET 1 OF 1

Current development concepts for the entire property, which are approximate with final numbers subject to change, include:

- A golf village destination resort community with,
- one or two resort hotels,
- two or three golf courses (21 holes in Master Phase II, the balance on Master Phase I),
- a golf practice playing area in Master Phase II,
- housing to supplement resort hotel accommodations for longer rental, (e.g. bungalows, casitas. and 'time-shared' lodge-type facilities in Master Phase II),
- conventional neighborhoods with a range of home offerings of approximately 2,500 single-family residences (500 in Master Phase II, 2000 in Master Phase I),
- local office and local retail (most of which are in Master Phase I),
- low density apartments with a total of approximately 1,000 units (500 units in Master Phase II and 500 units in Master Phase I),
- roadways and landscape buffers,
- open and green space including flood plain and creek buffers, and
- associated infrastructure.

The Applicant has advised the Service that the Proposed Alternative is the result of extensive planning work and reiterative processes conducted by and among geologists, ornithologists, and biologists; golf course designers; environmental professionals; engineers; community and home builders of new neighborhoods in this area; local, state, and federal officials and regulators; as well as many neighborhood groups and special interest groups in the San Antonio area. The Proposed Alternative has been shaped by concerns for balancing the needs of the community for more open space in an urbanized environment, the needs of area wildlife, the needs of local and future San Antonio residents for new housing and recreational opportunities, and the need of the Applicant for a reasonable return on an investment.

Included as part of the Proposed Alternative, the Applicant has voluntarily made the 'Golf Village' configuration subject to various San Antonio regulations. This commitment is documented in the "Amended and Restated Agreement for Services In-Lieu of Annexation" among the COSA and LIC dated January 28, 2005, which has been provided to the Service. The COSA Agreement applies exclusively to the construction and operation of the PGA Tour's Tournament Players Course San Antonio Golf Village, and so would not take effect in the event the Tournament Players Course San Antonio Golf Village were eliminated from the community plan. The Proposed Alternative is intended to encompass the anticipated areas of development with a golf village as one of the components. The COSA Amended and Restated Agreement for Services In-Lieu of Annexation includes the following significant conditions that are above and beyond existing development requirements and regulations that the Applicant would be required to follow:

- a major reduction of impervious cover to 15 percent or less, reduced from an allowed 80 percent or greater;
- dedication of conservation easements on approximately 760 acres (307.6 hectares) of public green space (in Master Phase I and II), space that would otherwise be unavailable to wildlife or the community as a whole;
- in addition to the 760 acres in conservation easements, a minimum of 500 acres (202.3 hectares) of golf course and open space must be provided for a total of some 1,200 acres (485.6 hectares);
- voluntary compliance with City regulations concerning preservation of significant trees, water quality, and other development regulations in current usage;

- preservation of the 100-year floodplain over the entire property and use of graduated widths of naturally vegetated buffer zones between golf course(s) and surface water areas and areas with environmentally-sensitive features;
- a prohibition on the installation of underground storage tank systems;
- severe limitations on the installation of aboveground storage tank systems above those that are standard requirements of the TCEQ;
- restrictions and limitations on the use of private on-site sewage facilities;
- formation of an independent Geologic Arbitration Committee under the direction of the COSA and SAWS, the first of its kind ever to be used in the San Antonio region, to conduct a review of features ranked as "possible-sensitive" features under the TCEQ guidelines and to determine whether the features were actually sensitive or not and to recommend protection of these features before, during, and after construction, and to serve as an on-going committee to review geologic features encountered during construction;
- buffering and protection of sensitive geologic features otherwise not required to be preserved and protected;
- a prohibition on the storage of fuels on the Property for construction of non-golf course related improvements and a limited storage of up to five gallons (18.9 liters) of fuels during the construction on golf course related improvements, whereas under current standards, up to 250 gallons (945 liters)of fuels may be stored without being regulated and up to 500 gallons (1,890 liters) may be stored if subject to TCEQ regulations; and
- a payment to SAWS annually in the sum of $100,000 for the term of the COSA Agreement for water quality monitoring to be performed by SAWS.

In addition, the PGA Tour's Tournament Players Course courses would be subject to the separate agreement with the COSA and administered by SAWS, concerning construction, operation and maintenance (O&M). The Golf Course Environmental Management Plan includes the following significant conditions that are above and beyond existing development requirements and regulations that the Applicant would be required to follow:

- Establishment of a retention/closed loop irrigation system for at least 85 percent of the golf course irrigated area to facilitate the capture of runoff from each golf course and routing of the runoff to the irrigation lakes where the runoff will be used as irrigation water. This provision is especially significant as it will result in 100 percent removal of Total Suspended Solids and related constituents for both predevelopment loads and post development loads for as much as half of the "golf course" areas presently anticipated to be 250 - 300 acres, (100 - 120 hectares) or more than one-fourth of the entire developed area of the Property,
- Placement of a twelve inch (30.5 centimeters) clay shaping and sub-grade layer or a synthetic liner below the eight inch (20.3 centimeters) required soil profile;
- Water quality management zone criteria shall be designed to identify potential water quality risks for specific conditions present within areas of each golf course for purposes of preparing specific management practices that shall be implemented within each zone. Water quality risk factors shall be delineated and considered, including soils, proximity to surface water, depth to permeable bedrock, proximity to sensitive features, and topography. The risk factors shall be addressed in golf course management practices;
- Golf course runoff not captured in the retention/closed loop irrigation system will be treated in accordance with specific water quality management zone criteria;
- All sensitive geologic (karst) features within the golf course shall be preserved and protected;
- Design shall include natural vegetative buffer strips around sensitive features and Federal Emergency Management Agency 100-year floodplains;
- Long term sampling and monitoring of surface and subsurface water quality;

- Limitations and specific approval and application requirements on chemical usage (which would be extended to non-golf course activities such as lawns and landscaping by separate deed restriction);
- Enforcement provisions and fines; and
- Specific best management practices for storage of chemicals, spills, storm water containment and cleansing, percolation and leaching in the soil profile, and more.

The COSA Agreement has been reviewed by the Service (Austin Ecological Services Field Office).

Further, the following methods and practices will be implemented in the design of the community under the Proposed Alternative in residential and non-golf related areas:

- Best management practices (BMPs) in accordance with the TCEQ's requirements will be utilized to treat storm water runoff from commercial and multi-family residential developments. These BMPs may include sedimentation/filtration basins, vegetative filter strips, retention/detention basins, and/or grassy swales. BMPs will be sized and located in accordance with TCEQ's Technical Guidance Manual RG-348 (1999) to remove at least 80 percent of the incremental increase in the annual mass loading of total suspended solids caused by development of these sites.
- For the single-family residential development located within the westernmost portion of the Proposed Alternative, a sedimentation/filtration basin will be utilized to treat storm-water runoff from this approximately 45-acre development. The basin will be sized and located in accordance with TCEQ's Technical Guidance Manual RG-348 (1999) to remove at least 80 percent of the incremental increase in the annual mass loading of total suspended solids caused by development of this single-family area.
- For low-density single-family residential developments within the Proposed Alternative, vegetated buffers, and grassy swales may be utilized to provide substantial additional removal of pollutants from storm water runoff from streets and residential lots.
- The 100-year ultimate development floodplains and sensitive recharge features will be preserved. The 100-year ultimate development floodplain represents the floodplain after development of the entire watershed for each drainage way and represents a larger area than the Federal Emergency Management Agency (FEMA) floodplain.
- For non-golf course land, including single-family residential, multi-family residential, resort, and other commercial land uses, only organic fertilizers, pesticides, and herbicides may be used per community restrictions. No pesticide or herbicide applications will occur in buffer zone areas.
- Owner educational materials related to adopted BMPs for fertilizer and pesticide use and water conservation measures will be provided to all subsequent property and homeowners.
- Native-scaping and low-water use landscape treatments will be encouraged in landscaping, lawns, ornamental landscape areas, greenbelt restorations, and open space areas outside of the golf courses.
- A prohibition will be imposed on the storage of fuels for construction of areas outside the golf courses, whereas under current standards, up to 250 gallons of fuels may be stored without being regulated and up to 500 gallons may be stored if subject to TCEQ regulations.

For the golf course areas, the following additional BMPs will be utilized to protect water quality:

- The golf courses will include graduated levels of vegetated buffer strips to the FEMA 100-year floodplain and sensitive features;
- An extensive monitoring plan in and around the Tournament Players Course San Antonio Golf Village Golf Course areas is included. Periodic monitoring of storm water runoff, golf course irrigation lakes, and monitoring wells will be conducted to evaluate the effectiveness of BMPs.

Water analysis will cover a broad range of analytes including herbicides, pesticides, and fungicides used on the golf courses.

- Specific trigger levels have been established that will initiate further evaluation and modification of land management practices.
- A prohibition on the installation of underground storage tanks systems;
- Severe limitations on the installation of aboveground storage tank systems above those that are standard requirements of the TCEQ;
- Severely limited storage of up to only five gallons of fuels at construction trailers or other structures by any contractor during construction of golf course related improvements
- Limitations and provisions for specific prior approval and application procedures and requirements on chemical usage;
- Additional specific best management practices for storage of chemicals, preparedness for and handling of spills, storm water containment and cleansing, and reduction of percolation and leaching in the soil profile.

For both residential and golf related areas, the following voluntary BMPs, protocols and procedures will be implemented and followed:

- Gates will be provided to limit access to any new karst feature, which may be discovered in the course of construction and are preserved under other provisions herein. The gates would be constructed similar to the one already on the site. The gates are designed and placed by Mike Warton, of Warton and Associates, Inc.
- LIC will continue to use (already in place) a protocol which they use on all projects over karstitic limestone which specifies procedures which contractors much observe in the event they locate an interstitial void or feature, which includes protection, inspection by professionals, sampling for troglobitic species, and either preservation or closure per TCEQ approved methods, depending on the results of these investigations
- Vegetated stream buffers (such as those buffering the FEMA floodplain) will be sized in compliance with SAWS regulations.
- Basins and other erosion controls will be utilized as sediment traps during construction.
- Water quality basin material traps will be located along Cibolo Canyon Blvd, a major thoroughfare, to treat its runoff.
- Basins that are temporary or permanent will be maintained by the property owner's association either directly or by third party contractors. The party maintaining the basin will be identified on signs located at the basin.

4.2 Alternative Two –Full Development Plan on Evans Road Tract with Wolverton Tract and the North Triangle Tract

The Service is advised that the plan for the Evans Road Tract portion of the Property since its purchase by LIC in 1986 was to construct a series of high density, small lot neighborhoods to be built out by a number of production builders over a period of 20 to 30 years. LIC, along with a number of neighboring landowners, entered into an agreement with the COSA and SAWS to extend major water distribution lines to the site in exchange for fully approved and vested development rights on the Evans Tract. The money was paid by LIC, and the water capacity was committed to the Tract. A land plan to achieve the full commitment was processed and approved by the City. This full development plan is on file with the City. As shown in detail in Figure 3, the full development plan includes full development of the Evans Road Tract property into 5,620 small lots, 2,200 apartments, 72 acres (29.1 hectares) of commercial use sites, and approximately 100 acres (40.5 hectares) of parks. COSA approved this development plan for the Evans Road Tract in January, 1995. Therefore, the Evans Road Tract is "grandfathered" under COSA and Texas law from the need to compliance with current ordinances and requirements enacted by both

City of San Antonio and SAWS. These would impose greater restrictions on impervious cover, greater restrictions on intensity, and more restrictive environmental and water quality regulations. The Proposed Alternative has development at far lower intensities than those that are "grandfathered".

Under Alternative Two, LIC would propose that the other portions of the Property, those portions on the Wolverton and North Triangle tracts, would be developed with 820 additional residential lots that would fall under present COSA and SAWS regulations. (See approved full development plan at Figure 3.)

The opportunity to create the lower intensity golf village and resort project utilizing all of the three tracts in synergy, when it occurred and as long as it remains viable, has moved the approved Alternative Two to a position that represents a second but presently not preferred alternative for the Applicant. It was rejected in favor of the lower intensity residential and commercial development and far greater amounts of preserved green space, the voluntary water quality protections, the voluntary reductions in impervious cover, and other greater environmental benefits that will result from execution of the Proposed Alternative described in this present Permit/HCP. The presence of the golf facilities and resort involvement in the Proposed Alternative makes lower intensity and other attributes of that community plan more predictable in many of those attributes as well as financially viable for the Landowner.

4.3 Alternative Three -- Low Density, Large Lot Community – No Golf or Resort

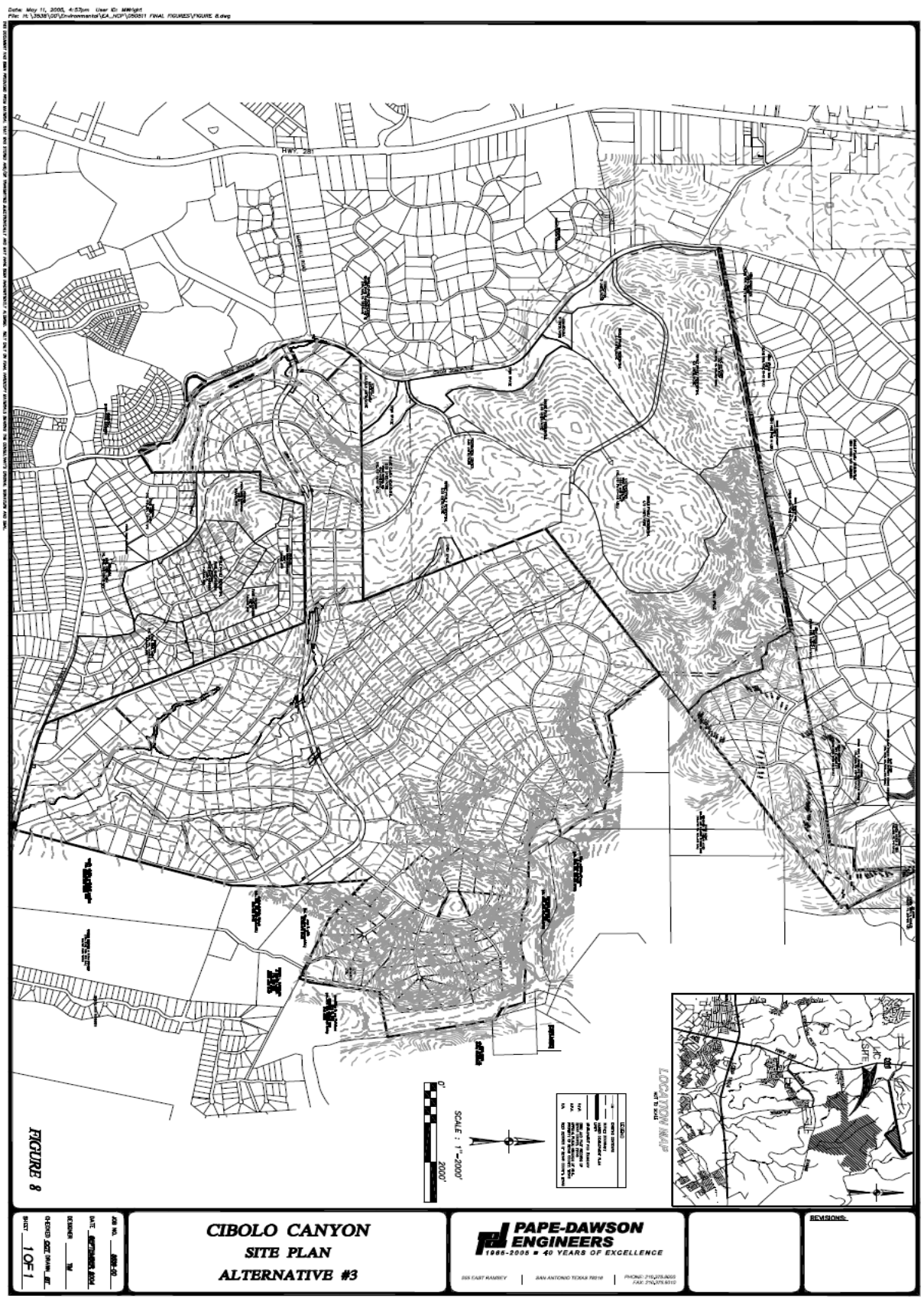
Alternative Three would continue the large lot residential development trend of the Clear Springs, Fossil Ridge, and Fossil Creek subdivisions. These developments lie north and south of LIC's proposed development, and are nearly fully developed.

Under the scenario evaluated for this configuration, the Property would be built out through lot sales to private builders or to individual lot buyers to either hold or build on. The conceptual plan shown in Figure 8 for Alternative Three is comprised of approximately 105 lots in the Property averaging six acres (2.43 hectares) in size.

As is the case in the other existing projects mentioned above, additional community green space is either not provided or minimized in favor of rear lot areas that include the fee simple transfer to the lot owner of portions of tributary and drainage areas that might otherwise be community set-asides or buffer zones. This is considered important in the marketing of larger lots; large lot owners prefer to own these green space acres rather than be adjacent to common greenbelts.

This type of land use typically results in a "patch-work" array of homes and related structures, with interspersed green areas. While this sort of configuration usually supports numerous and abundant wildlife, it is not consistent with the habitat requirements of the GCWA. Even low-density development adversely impacts GCWA habitat when it is scattered throughout the habitat. Indeed, in comparison to the Proposed Alternative, Alternative Three may have greater overall impact on GCWA habitat because more land will be divided into lots and subject to subsequent disturbance and already fragmented and patchy vegetated areas would be further fragmented.

The differences in infrastructure requirements makes the higher intensity, centrally-sewered plan (Alternative Two) preferable to an overall unclustered or "estate" plan (Alternative Three) that would add additional direct disturbance due to additional areas needed for septic field systems in place of sewerage in road right-of-ways. Septic systems, when "working properly" dispose of essentially raw sewage by discharging it underground after minimal 'treatment' in buried tanks, if any. When "working


HWY 281
SCALE : 1"=2000'
0'
2000'
LOCATION MAP
SITE
FIGURE 8
CIBOLO CANYON
SITE PLAN
ALTERNATIVE #3
PAPE-DAWSON ENGINEERS
1985-2005 ■ 20 YEARS OF EXCELLENCE
SHEET 1 OF 1
REVISIONS:

improperly" raw sewage can be discharged up to the surface to flow into watercourses, or into underground openings. From many perspectives, neither is a preferred solution to modern central treatment and collective conveyance of sewage as is proposed in the Proposed Alternative.

This alternative was finally rejected due to its potentially greater impact on the GCWA and the fact that, LIC advises, existing off-site infrastructure investments that are currently in excess of $14 million must ultimately be recouped in the sale price of the land as some number of parcels. This investment has been made, and it is intended to serve several thousand units. It is far in excess of what would have been required for a low-density large-lot community in the same area and one that would then be competing in the same market for the same buyer as other large lot communities surrounding Master Phases I and II. Lot cost is affected dramatically by the requirement to recover the $14 million plus interest in the sale of the land as subdivided parcels. The addition of the off-site infrastructure cost would make the large lot sale price uncompetitive in the marketplace, not likely to be sold, and at the same time offers no environmental advantage over other preferred concepts.

4.4 Alternative Four – No Action

This alternative assumes that the proposed development of the Property does not occur and that no application for an incidental take permit is processed. Under this alternative, the Applicant would not construct the Cibolo Canyon Community project as it is described in the Proposed Alternative section. The Applicant would abandon any plans for future use of the Properties. Under the No Action alternative, the entire Master Phase II of Cibolo Canyon Property would continue to be used for ranchland and hunting. Ranching would include activities such as juniper clearing and raising livestock. In the likely event that revenues from ranching and hunting could not recover infrastructure expenses accrued to date and/or cover the ongoing expenses, the Applicant would have to pursue other methods to cover expenses of its ownership or sell the Property to a third party. Acquisition by a third party would likely require them to consider similar means to compensate for the ongoing expenses of the Property. This alternative provides an unlikely means of recovering economic value for the Applicant; therefore, the Applicant chose not to pursue this option.

5.0 ENVIRONMENTAL CONSEQUENCES

5.1 Alternative One – Proposed Alternative

5.1.1 Direct Impacts

As defined in Council on Environmental Quality (CEQ) regulations (40 CFR § 1508.8), "direct effects" are effects which are caused by the action and occur at the same time and place. Effects and impacts as used in these regulations are synonymous. Effects includes ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions that may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial

Although development and construction of the Property will disturb vegetation on-site and reduce habitat for wildlife, including the potential destruction and degradation of GCWA habitat, implementation of the Proposed Alternative is expected to offset such impacts to the maximum extent practicable through avoidance, minimization, and mitigation efforts as described in Section 6.0.

5.1.1.1 Vegetation

Of the 1,606 acres of the Property, 846 acres of upland areas is where the development identified in the Proposed Alternative will occur. Within the 846-acre Development Area, native vegetation will be modified and replaced with structures of various sorts, golf turf, and landscaped areas. Landscaping will be performed with native vegetation to the maximum extent possible. In addition, the native vegetation within substantial portions of the larger development envelope will be preserved in smaller greenbelts and setbacks. While these areas of preserved native vegetation are a component of minimizing the impact on this resource in general, they are not counted as mitigation for impacts to GCWA habitat. The remaining approximate 760 acres of undisturbed vegetation within the Property will be set aside as the Conservation Area and provide habitat for the GCWA.

5.1.1.2 Wildlife

Wildlife within those areas planned for development would largely be displaced to adjacent designated open space during the construction process. Such displacement could result in increased competition for breeding, nesting, and foraging habitat, as well as cover, in adjacent undisturbed habitat. Outside of designated open space, the promotion of urban wildlife species and human activities related to the proposed development may result in the decline of more specialized species in general.

Urban development often results in increases in generalist species, or species that are successful within a wide range of habitat including human-impacted areas. Increases in species that are habitat generalists (e.g., crows, jays, and mice) often occur at the expense of species with narrower habitat requirements. Possible introduction and/or increase of predators such as house cats, crows, and jays can have an impact on wildlife communities, particularly nesting birds.

5.1.1.3 Threatened or Endangered Species

Golden-cheeked Warbler

The Property provides habitat of varying quality for the GCWA. Habitat in this context is not limited to just breeding habitat, but also includes foraging and sheltering habitat. During the course of a breeding season, it is expected the GCWA could be found exhibiting breeding, feeding, and/or sheltering behavior at locations across much of the Property. As described below, the proposed HCP will result in the modification of some habitat and the preservation of other habitat as mitigation.

Implementation of the Proposed Alternative will result in the destruction or adverse modification of 846 acres of GCWA habitat. At various times during the previous survey efforts, GCWAs have been observed utilizing locations across essentially the entire 846-acre development envelope (Figure 4). These surveys, however, have been conducted at a "presence/absence" level of effort, thus limiting the ability to either delineate or reliably count GCWA territories that may have been present. Based on its review of all of the survey data, however, the Service has estimated that as many as 8 territories have been supported, or partially supported, within the proposed Development Area. Under the Proposed Alternative, clearing in all areas of GCWA habitat would occur during the time of year when the GCWA has migrated and is not present. Potential impacts to the GCWA could occur when returning individuals find previous habitat areas have been modified and as a result, there has been a general reduction in available habitat.

GCWA surveys on the North Triangle and Wolverton Tracts have estimated that 12 GCWA territories have been supported, or partially supported, within the approximately 760 acres of the proposed Conservation Area (Figure 4).

No Critical Habitat has been designated for this species. Therefore, none will be impacted.

Black- capped Vireo

Habitat evaluations conducted by Horizon and aci concluded that the vegetation of the Property lacks the requisite shrub density and shrub species regularly occupied by the BCVI (aci 2002a). No impacts to the BCVI are expected as a result of the proposed development. The Applicant has not requested take coverage for the BCVI and none would be granted by issuance of the Permit. No Critical Habitat has been designated for this species. Therefore, none will be impacted.

Karst Invertebrates

The Property is located in the Stone Oak karst fauna region. Of the nine endangered karst or cave-dwelling invertebrates known to occur in Bexar County, three species are known to occur in the Stone Oak karst fauna region. The Property is not designated by the Service as Critical Habitat for any of the endangered karst invertebrates. Extensive karst surveys of the Property have not revealed the presence of any endangered karst invertebrate habitat or species (see Section 3.5).

Field methods utilized to identify and evaluate potential karst features were intended to meet both the Service draft protocols (Versions May 8, 2000; April 8, 2001; and May 23, 2001) for identifying karst features and TCEQ criteria for Geologic Assessments on the Edwards Aquifer Recharge Zone. A total of 330 geologic features were mapped, which included 142 non-karst features such as fault zones, fractured rock outcrops, stream scours, and water wells. One-hundred-eighty-one geologic features and ninety-nine 99 non-karst features were located within Master Phase I and 149 geologic features and 43 non-karst features were located within Master Phase II. The investigations revealed the presence of 188 possible karst features on site. Excavation of 185 of these possible karst features revealed that the features rapidly constricted, had well developed soil horizons with compact clay at depth or exhibited no airflow. No habitat suitable for karst invertebrates was encountered at any of these 185 features. In accordance with the above-referenced protocols and methodology, excavation was performed by hand until encountering a cave, solid bedrock with no portals, packed clay with no airflow present, potential archaeological or paleological materials, or where continued excavation would be dangerous. No mechanical equipment was used. One of the three remaining karst features is an open cave known as Elm Waterhole Cave (located within Master Phase I). The two remaining features were excavated into voids large enough to enter. One of the features is cave-sized, was named Stein Cave, and is located within Master Phase II. The other feature is smaller than a cave, was called Peanut Sink, and is located within Master Phase I.

Biological karst invertebrate collections performed by Warton & Associates did not reveal the presence of any endangered species in any of the three features entered. The Applicant has not requested take coverage for any karst invertebrate and none would be granted by issuance of this permit.

Edwards Aquifer Species

The Service has expressed concern that the combined current level of water withdrawal for all consumers from the Edwards Aquifer could adversely affect aquifer-related species located at Comal, San Marcos, Fern Bank, and Hueco springs during low flows, and that effects on the Aquifer may also affect the Cagle's map turtle (a candidate for listing). Regional efforts are expected to address the potential impacts to aquifer-related species from water quantity withdrawals (see Section 3.3.3).

Edwards Aquifer species are not found within the project area, and therefore, any possible effects to these species would be indirect and/or cumulative.

5.1.1.3.1 Assessment of Take

The Property has been evaluated for the federally-listed threatened or endangered species discussed under Section 3.3 above. Other than evidence of use of the Property by the GCWA, there is no evidence of any other threatened or endangered species on Master Phase II. Past survey efforts have provided valuable information in determining the extent of GCWA occupation on the Property. However, it does not provide a precise mechanism for predicting the number of GCWAs that may actually be "taken" by the proposed action. The effectiveness of GCWA surveys in counting the number of birds in an area can be somewhat limited. For example, GCWA males are much more easily observed than females or fledglings during surveys due to their territorial behavior and frequent vocalization. Moreover, the GCWA occupation of a given area can vary significantly from year to year, and appears to have done so on this Property depending on a wide variety of factors. In addition, the impacts may not be fully felt in a single season and may be spread over several, or even many years during which utilization of the site may vary quite significantly for reasons unrelated to the proposed community. For these reasons, it is not possible to predict a precise number of GCWAs that may, over time, be taken or preserved as a result of the proposed action. It is more accurate and appropriate to state that, over time an area that has been observed to support GCWAs may or may not be rendered unsuitable for the GCWAs. "Take" or mitigation, therefore, is not in this document characterized by a precise bird count, but by the loss or preservation of areas, the relative quality of which is in part determined by the levels of prior observed GCWA utilization as well as the assessment of vegetated assemblages and other factors that may or may not impact the GCWA.

The Proposed Alternative is expected to result in development of 846 acres of the overall 1,606 acres. Upon completion of Master Phase II, the viability of GCWA habitat within developed areas of the Property is uncertain for the reasons previously stated. Therefore, this modified GCWA habitat, which has been documented to support, or partially support as many as 8 GCWA territories, will be mitigated by the preservation and management of approximately 760 acres, which has been observed to support or partially support at least 12 GCWA territories. Based upon topographic and vegetative characteristics, the area proposed for preservation likely supports, and with further management will support higher quality GCWA habitat.

5.1.1.3.2 Assessment of Take of Other Listed Species

The Property has been evaluated for the federally-listed threatened or endangered species discussed under Section 3.3 above. Other than evidence of use of portions of the Property by GCWAs, there is no evidence of any other threatened or endangered species on the Property (see Sections 3.3.1, 3.3.2, 3.3.3, and 5.1.1.3). It appears that no listed species, other than the GCWA, are likely to be present on or adjacent to the Property, and therefore it is unlikely that any such species will be taken or affected by development and operation of the Proposed Alternative.

5.1.1.4 Wetlands

Areas within the Property potentially subject to Section 404 of the Clean Water Act are limited to the two drainages. Proposed development within the Property, except for limited infrastructure crossings, will be setback from these drainages by at least 50 feet (15.2 meters) or more depending on the specific location and size of contributing area. Runoff into these drainages is to be treated according to applicable local regulations and the COSA agreement (or an environmental protection program similar to those accepted in other local communities with similar uses) and the TCEQ Edwards Aquifer Rules and standards for construction-related pollution and sedimentation prevention. Wetlands, as defined by the criteria established in the 1987 Federal Manual for Identifying and Delineating Jurisdictional Wetlands do not exist on the Property. If planned activities would result in impacts to "waters of the U.S.", then LIC

would seek authorization from the U.S. Army Corps of Engineers (USACE) prior to conducting such activities.

5.1.1.5 Geologic Features and Soils

Areas proposed for development are underlain by the Edwards group formation and Trinity group formations. Since soils are very thin and rocky, surface soil alterations in development areas, such as grading, will be minimized to the extent practical and will comply with all applicable TCEQ, Bexar County, COSA, and SAWS construction codes for erosion and sedimentation control during construction. Construction will require drilling, trenching, and excavation of limestone rock in order to install foundations, roadways, and utilities. Impacts to geologic features are expected to be minor because all known features are located within open space, floodplains, and creek buffers and will be preserved per the COSA Agreement. All other sensitive geologic features, as defined by TCEQ guidelines and by a Geologic Assessment Committee established by the COSA, will be preserved. Non-sensitive features within areas of construction will be subject to closure and sealing or protection by one of a number of TCEQ specified Best Management Practices.

5.1.1.6 Land Use

The Property is currently ranchland used for hunting, cattle grazing, and similar agricultural uses. New development on the Property will consist of mixed-use commercial, residential, and resort development. The Proposed Alternative will result in the conversion of portions of the land from ranchland/open space to development. The proposed development is comparable and compatible with current land use in the area. Under this alternative, approximately 760 acres of open space would be preserved in conservation easements, approximately 500 acres (202.3 hectares) would be open space, or golf, and the overall development would be less than or equal to 15 percent impervious cover.

5.1.1.7 Cultural Resources

All archaeological sites within the Evans Road Tract and Wolverton Tract portions of the Property will be directly impacted. However, these sites have very little research value and represent negligible cultural resources. Sites 41BX1561, 41BX1565 and 41BX1566, which are located in the North Triangle Tract, are located in undeveloped open space and will not be impacted by the proposed action. No sites that are eligible or potentially eligible for the National Register of Historic Places will be impacted.

5.1.1.8 Air Quality

Development of the Property will increase exhaust emissions by increasing the number of gas-powered vehicles on the Property. A reduction in the number of trees on the Property may slightly reduce air-filtering capabilities. A temporary increase in dust levels is expected during the construction process. These minor effects on air quality conditions are not expected to result in any significant impacts to air quality.

5.1.1.9 Water Resources and Water Quality

Possible water quality impacts to the Edwards Aquifer should be considered from two sources, water that infiltrates on-site and water that runs off the Property and potentially infiltrates downstream of the Property.

For the first area of consideration, water that infiltrates on-site recharges the Upper Trinity Aquifer. Groundwater recharge occurs primarily in streambeds (Metcalf and Eddy 1979). Preservation of open

space, floodplains, creek buffers, and sensitive geologic features within these areas will prevent significant losses of recharge to the Upper Trinity Aquifer. Studies have been conducted that identify evidence that some groundwater movement from the Upper and Middle Trinity Aquifer to the Edwards Aquifer occurs in some areas across faults (George 1947, 1952; Small 1986; Veni 1997; EUWD Report 95-03). Movement of some groundwater from the upper member of the Glen Rose Formation to the Kainer Formation of the Edwards Group may occur across the Bat Cave Fault. The location of the fault as mapped by Pape-Dawson and Stein and Ozuna (1995) is presented on Figure 5. Recharge from the Glen Rose Formation to the Edwards Aquifer within the entire San Antonio Segment of the Edwards Aquifer is estimated to be probably less than two percent of the total recharge (EUWD Report 95-03). The EUWD Report 95-03 references cross sections by Small (1986) through the EARZ that show areas in which faulting juxtaposes the Glen Rose Formation of the Trinity Aquifer and Edwards Group in the subsurface. These cross sections, water levels, and aquifer transmissivities were used to estimate the volume of flow across faults from the Glen Rose Formation to the Edwards Aquifer. A six-mile length of faulting in the area of the Property was estimated to transfer between 97 and 351 acre-feet of water per year from the Glen Rose to the Edwards. (EUWD Report 95-03). Total recharge from surface water to the San Antonio segment of the Edwards Aquifer is approximately 794,070 acre-feet averaged over the last ten years. This means that an equivalent of approximately 0.01 percent to 0.04 percent of total recharge in the San Antonio segment of the Edwards Aquifer might occur from the Glen Rose Formation of the Trinity Aquifer to the Edwards Aquifer in the area of the Property.

However, a recent detailed investigation conducted by SAWS on the "bad-water" line of the Trinity Aquifer suggests that faults between the Trinity Aquifer and Edwards Aquifer may be barriers to flow in Bexar County and in the area of the site. Mr. Alvin Schultz, consultant for SAWS, presented data at the November 12, 2003 meeting of the South Texas Geologic Society that indicate there is an approximately 40-foot difference in the potentiometric groundwater levels between the Trinity Aquifer and Edwards Aquifer in the vicinity of the Property. This difference in water levels was interpreted by Mr. Schultz as a possible indication that faults between the aquifers are barriers to flow. Mr. Schultz's detailed investigation also indicated that if groundwater flow from the Trinity Aquifer to the Edwards Aquifer was occurring, the water transferred was naturally occurring, poor quality water with elevated concentrations of dissolved solids and sulfates.

In summary, some data indicate that flow may occur from the Glen Rose formation of the Trinity Aquifer to the Edwards Aquifer in the vicinity of the site equal to 0.01 to 0.04 percent of the total surface water recharge to the Edwards Aquifer San Antonio Segment. However, some recently collected data by SAWS consultant Mr. Alvin Schultz suggest faults between the Trinity Aquifer and Edwards Aquifer are barriers to flow in the vicinity of the site.

For the second condition where storm water runoff leaves the site and infiltrates downstream of the Property, no significant impacts to water resources or water quality are expected to occur due to the use of best management practices described elsewhere, herein. Development will take place in accordance with the TCEQ Edwards Aquifer Rules and in accordance with all applicable local ordinances and the stringent COSA Agreement between LIC, the COSA, and the SAWS. The following best management practices will be implemented under the Proposed Alternative:

- The proposed development will limit imperious cover to 15 percent over the entire site. EPA studies have indicated that the concentrations of pollutants in urban runoff can be directly related to the degree of development, especially the amount of impervious cover. Limiting the impervious cover to 15 percent is one of the most effective ways to preserve the site's predevelopment runoff characteristics;

- 100-year flood plains and sensitive recharge features will be preserved. The golf courses will include buffer strips to the FEMA 100-year floodplain and sensitive features, protecting areas within both Master Phase I and Master Phase II;
- For non-golf course land, only organic fertilizers, pesticides, and herbicides may be used. No pesticide or herbicide applications will occur in buffer zone areas.
- Owner-educational materials related to BMPs for fertilizer and pesticide use and water conservation measures will be provided to property owners.
- Only native-scaping and low-water use landscapes will be permitted in landscaping lawns, ornamental landscape areas, greenbelts, and open space areas on the non-golf course land.
- An extensive monitoring plan in and around the Tournament Players Course San Antonio Golf Village Golf Course areas is included. Periodic monitoring of storm water runoff, golf course irrigation lakes, and monitoring wells will be conducted to evaluate the effectiveness of BMPs. Water analysis will cover a broad range of analytes including herbicides, pesticides, and fungicides used on the golf courses.
- Specific trigger levels have been established that will initiate further evaluation and modification of land management practices.
- Additionally, according to the Water Pollution Abatement Plan for this property, BMPs in accordance to the TCEQ's requirements will be utilized to treat storm water runoff from commercial and multi-family residential developments. These BMPs may include sedimentation/filtration basins, vegetative filter strips, retention/detention basins, and grassy swales.

In view of the comments and assessments made in creating the COSA agreement and the implementation of BMPs to improve the quality of the storm water runoff leaving the Property, no significant impacts to water resources and water quality are expected to occur from infiltration of storm water runoff downstream of the Property.

The closest receiving water on the State of Texas 1999 Clean Water Act Section 303(d) list is approximately 6.5 miles (10.5 km) downstream of the site. The Mid-Cibolo Creek and Upper San Antonio River stream segments will receive water downstream of the site and are on the 303(d) list. These segments are on the list due to low dissolved oxygen concentration (Mid-Cibolo) and bacteria levels exceeding criterion established to assure the safety of contact recreation (Upper San Antonio). The proposed site development should not significantly affect dissolved oxygen, bacteria levels, or other water quality parameters of these segments.

Annual water demand for the completed development is estimated to be 6,928 equivalent dwelling units or 2,078,400 gallons (7,856,352 liters) per day (average flow). This water is expected to be provided by SAWS, per the terms of the SAWS Agreement. In November 2002, LIC entered into a Water Service Agreement and a Water Provision Agreement with SAWS for the supply of potable and irrigation water, respectively. Each SAWS Water Agreement establishes terms and conditions under which SAWS will supply water for potable uses and for irrigation of golf course(s) and roadway medians within the boundaries of the Property. The ultimate water supply to the Property is limited under the Water Service Agreement for potable water service. The Water Provision Agreement limits the supply of water for irrigation uses and requires the transfer of all on-site groundwater well facilities and related rights from LIC to SAWS. The Master Phase II development is expected to purchase water from SAWS, and SAWS will control all on-site groundwater wells and rights. SAWS operates under the regulation of the Edwards Aquifer Authority (EAA).

5.1.1.10 Socioeconomic Environment

The proposed development, construction, and occupation of the Property would result in construction and operation of mixed use residential, commercial, and other development with attendant roads and utilities on almost all portions of the Property, excluding the designated Conservation Area. Development of this Property would provide additional commercial, residential, and may include resort areas.

Socioeconomic benefits in the form of jobs will occur when the project is under construction. The construction payroll over two years for the construction of each hotel, for example, is estimated to be $35,400,000 and over 18 months for the construction of two golf courses and a learning center is estimated to be $10,000,000. Additional jobs and benefits will be generated over approximately 15 to 30 years through the construction of single-family and multi-family residential developments. Other benefits include purchase of amenities such as materials, parts, food services, fuel, and lodging. The construction estimate for each hotel is approximately $150,000,000 - $175,000,000 and the construction estimate for two golf courses and a learning center is approximately $40,000,000.

In addition to socioeconomic benefits associated with the creation of jobs and increase in property values, LIC has voluntarily committed to the COSA to address social justice concerns raised during community discussions regarding possible golf and resort uses. LIC has contractually agreed to adopt a non-discrimination policy and adherence to an advocacy policy through efforts to comply with the City's contracting goals for small, minority or women-owned businesses for any golf and/or resort hotels in the community. LIC will submit a "Good Faith Effort Plan" documenting their efforts to employ qualified, historically under-utilized businesses. In addition, LIC agreed under the Proposed Alternative to impose certain wage standards for employees of each hotel and golf course.

5.1.2 Indirect Impacts

As defined in CEQ regulations (40 CFR § 1508.8), “indirect effects” are effects caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems. Effects and impacts as used in these regulations are synonymous.

5.1.2.1 Vegetation

Minimal indirect impacts to vegetation are expected due to off-site utility construction associated with the proposed development. This off-site utility construction will be for installation of sewer mains and will occur in currently undeveloped areas that are proposed for development by others.

5.1.2.2 Wildlife

The proposed development plan may result in the reduction of overall habitat available to local off-site wildlife species. However, the majority of the tract is surrounded by planned or existing development with the exception of the northern and northeastern boundaries. Therefore, potential indirect impacts will be buffered by the 760 acres of the Conservation Area included in the HCP.

5.1.2.3 Threatened or Endangered Species

Golden-cheeked Warbler

Indirect impacts of this project pertaining to the GCWA may or may not include a reduction in overall nesting, foraging, and breeding habitat. Encroachment of noise and activity within close proximity of GCWA habitat, introduction or increase of predator species (e.g., scrub jays [*Aphelocoma coerulescens*], cats), and increase of species that may compete with the GCWA for shelter, forage, and nesting resources (such as brown-headed cowbirds [*Molothrus ater*]) are also potential indirect impacts of this development. These issues are considered in the Assessment of Take Section 5.1.1.3.1. The habitat identified as being preserved will likely experience some level of indirect impacts. These impacts may be lessened in the future as a result of a shift in the location of some birds away from the development. It is expected enough habitat will remain for these birds to persist.

These potential indirect impacts will be minimized and mitigated to the maximum extent practicable by the mitigation plan described in the HCP (Section 6.0) and by the synergism resulting from the combined effects of preserving adjacent tracts for the beginnings of a new, third GCWA preserve for this recovery area. This is particularly significant in that it will help provide a critical link between habitats in the Bexar County area to several existing preserves in the central and northern portions of the GCWAs range (Balcones Canyonlands Preserve, Balcones Canyonlands National Wildlife Refuge, and Fort Hood).

Edwards Aquifer

Onsite recharge

Six water wells have been drilled on-site and completed in the Middle Trinity Aquifer. Figure 6 is a cross section of the Property showing stratigraphic and hydrogeologic units and the groundwater levels measured in water wells drilled onsite. Based on geophysical logs of water wells drilled on-site by Pape-Dawson, groundwater depth varies at the Property but is generally at least 150 feet deep. The first water bearing unit is the upper member of the Glen Rose Formation or Upper Trinity Aquifer. The deeper lower member of the Glen Rose Formation and Cow Creek Limestone make up the Middle Trinity Aquifer. Deeper yet are the Sligo and Hosston Members of the Travis Peak Formation that make up the Lower Trinity Aquifer (Ashworth 1983). No water bearing Edwards Aquifer unit exists within the Property because the Edwards Group rocks exposed at the ground surface are not saturated. Therefore, water that infiltrates on-site recharges the Upper Trinity Aquifer, not the Edwards Aquifer.

In the event that a small amount of water is transferred from the Trinity Aquifer to Edwards Aquifer, the water would then need to move into the artesian zone of the Edwards Aquifer and then move northeast greater than 15 miles (24.14 km) before reaching Comal Springs. Due to the lengthy path of fluid migration to Comal Springs, possible barriers to flow, and the enormous water volume and high transmissivity of the artesian zone of the Edwards Aquifer, the potential for an impact to water quality at Comal Springs from a contaminant originating at the subject Property is negligible.

In summary, some data indicate that flow may occur from the Glen Rose formation of the Trinity Aquifer to the Edwards in the vicinity of the site equal to 0.01 to 0.04 percent of the total surface water recharge to the Edwards Aquifer San Antonio Segment. However, some recently collected data by SAWS's consultant Mr. Alvin Schultz suggest faults between the Trinity Aquifer and Edwards Aquifer are barriers to flow in the vicinity of the site. Therefore, due to the relatively small volume of water that may or may not possibly be transferred to the Edwards Aquifer, the presence of possible barrier faults to flow, the lengthy flow path from the Trinity Aquifer to the Edwards Aquifer to Artesian Zone and then to Comal Springs, and the enormous water volume and high transmissivity of the Edwards Aquifer, the overall potential impact to the aquifer-dependent species is negligible.

Offsite recharge
Surface water that leaves the property enters intermittent surface streams that flow across areas of the Edwards Aquifer Recharge Zone where Edwards strata are saturated and the Edwards Aquifer exists. Infiltration of surface water in these areas downgrade of the Property would recharge the Edwards Aquifer. The TCEQ Edwards Aquifer Rules regulate activities that may pollute the Edwards Aquifer and hydrologically connected surface streams. These rules are designed to protect existing and potential uses of groundwater, and maintain Texas surface water quality standards. As such, all development phases within the Property will be required to file a Water Pollution Abatement Plan and/or a Contributing Zone Plan with the TCEQ. In addition, construction of all wastewater facilities within the Recharge Zone will require the approval of a sewage collection system application from the TCEQ. The TCEQ Edwards Aquifer Rules require the implementation of temporary BMPs to prevent the transport of sediment off the site during construction disturbances and the implementation of permanent BMPs for the removal of at least 80 percent of the incremental increase in the annual mass loading of total suspended solids from the site caused by development of the Property. In addition to the TCEQ regulations, the aforementioned COSA Agreement places additional restrictions and requirements on development if major portions of the Property are developed as the golf village destination resort under the Proposed Alternative. The measures are further described in the analysis of the Proposed Alternative.

Aquifer Water Withdraw

Groundwater wells that will be used for irrigation on-site are completed in the Middle Trinity Aquifer. At SAWS request, these were drilled in place of the Applicant's proposal to utilize highly treated effluent for irrigation needs. The on-site wells were completed within the Middle Trinity Aquifer, and can only produce water from this Aquifer. Groundwater wells are spaced across the site and will not be pumped beyond the sustainable yield of the wells. Rainfall and recharge will periodically raise water levels and renew the groundwater resource. SAWS water, which is supplied by pumping of the Middle Trinity and Edwards aquifers, will be utilized as the drinking water source and will supplement irrigation, if necessary. Therefore, no on-site pumpage of Edwards Aquifer water will be conducted or utilized for potable uses or irrigation. SAWS will supply water for residential and other commercial use. SAWS use of Edwards Aquifer is limited by the amount of water rights issued by the EAA. Section 1.14 of the Edwards Aquifer Authority Act enacted by the Texas Legislature places a cap on the amount of water withdrawal that can be permitted by the EAA. This cap was expressly established in part to "protect species that are designated a threatened or endangered under applicable Federal or State law." The EAA is developing a regional HCP for Edwards Aquifer dependent species that will govern pumping of the Edwards Aquifer. Indirect threats to the Aquifer species are most effectively addressed on a regional, collective basis.

In summary, no Edwards Aquifer pumping will occur on-site. SAWS water used for residential and commercial developments and irrigation supplements will be restricted by SAWS. SAWS is ultimately regulated by the EAA, which will allow pumping in an amount that will comply with the regional HCP. Any indirect impacts associated with Master Phase II increasing withdrawal of water from the Edwards Aquifer will be avoided or minimized through the measures described above.

5.1.2.4 Wetlands

Proposed onsite sedimentation controls will minimize the amount of sediment and other storm water constituents introduced into any drainage on-site or downstream. No off site indirect impacts to wetlands or jurisdictional waters are expected.

5.1.2.5 Geologic Features and Soils

No off site indirect impacts to geologic or soil resources are expected to occur.

5.1.2.6 Land Use

No significant indirect impacts to existing or proposed land uses are expected to occur as a result of the proposed action, other than the combined effects of preserving adjacent tracts into the beginnings of a new, third GCWA preserve for this recovery region, as discussed throughout this document.

The majority of the properties adjacent to, or in the vicinity of, the Cibolo Canyon site, are currently developed or have existing master plans for development with clearing and construction underway. The primary land use of surrounding properties is single-family residences that lack any significant green space preserve areas, other than community parkland requirements. For the properties that are developed or are planned for development near the Cibolo Canyon site, the proposed action will not change or impact the use of those properties. Approximately 635 acres (257 hectares) of ranchette sites along the southeastern side of the Cibolo Canyon Property has no current plans for further subdivision. These properties consist of large acreage tracts ranging in size from approximately 8 acres (3.2 hectares) to approximately 185 acres (74.9 hectares) with individual single-family homes located on each. The proposed action will not alter the use of these large acreage tracts, whose uses are subject primarily to the plans of the owners that may or may not be subject to future ESA review.

Development of the Property will increase traffic on area roadways. At full build-out, the Proposed Alternative is projected to result in peak hour traffic in excess of 3,065 a.m. peak hour trips and 3,847 p.m. peak hour trips with more than 42,000 daily trips. The significance of these trips was studied along with non-site traffic growth to assess the transportation impacts of the proposed action on the area thoroughfares including Bulverde Road, Evans Road, US Highway 281, the proposed Stone Oak Parkway Extension from U.S. Highway 281 to Bulverde Road and the proposed Cibolo Canyon Boulevard within the Property. At full build-out of the proposed action, the traffic generated by the project is anticipated to account for approximately 10.2 percent of the traffic on Bulverde Road, 5.8 percent of the traffic on Evans Road, 52.4 percent of the traffic on Stone Oak Parkway Extension, and 73.9 percent of the traffic on Cibolo Canyon Boulevard. The remainder of the traffic is associated with existing or other proposed land uses. In addition, the capacity of key intersections was evaluated in terms of transportation standard Level of Service format. Level of Service is determined by the average delay a vehicle experiences on each intersection approach. The results of the intersection capacity analyses for six key intersections indicate that three of the intersections currently operate at unacceptable levels of service. At completion of the proposed action, non-site traffic is projected to cause unacceptable levels of delay resulting in poor levels of service at five of the six intersections. Only one intersection at U.S. Highway 281 and Stone Oak Parkway Extension is reduced from an acceptable to unacceptable Level of Service as a result of the site traffic.

5.1.2.7 Cultural Resources

No indirect impacts to cultural resources are expected.

5.1.2.8 Air Quality

Development of the Property will indirectly increase exhaust emissions by increasing the number of gas-powered vehicles entering and on the Property over the number experienced at present. A reduction in

the number of trees on the Property may slightly reduce air-filtering capabilities. These minor effects on air quality conditions are not expected to result in any significant indirect impacts to air quality.

5.1.2.9 Water Resources and Water Quality

Surface water that leaves the Property enters intermittent surface streams that flow across areas of the Edwards Aquifer Recharge Zone where Edwards strata are saturated and the Edwards Aquifer exists. Infiltration of surface water in these areas downgrade of the Property would recharge the Edwards Aquifer. The TCEQ Edwards Aquifer Rules regulate activities that may pollute the Edwards Aquifer, and hydrologically connected surface streams. These regulations attempt to protect existing and potential uses of groundwater, and maintain Texas Surface Water Quality Standards. The proposed development phases within the Property will be required to file a Water Pollution Abatement Plan and/or a Contributing Zone Plan with the TCEQ. In addition, construction of all wastewater facilities within the Recharge Zone will require the approval of a Sewage Collection System application from the TCEQ. The TCEQ Edwards Aquifer Rules require the implementation of temporary BMPs to prevent the transport of sediment off the site during construction disturbances and the implementation of permanent BMPs for the removal of at least 80 percent of the incremental increase in the annual mass loading of total suspended solids from the site caused by development of the Property.

No significant off-site impacts to water resources and water quality are expected to occur. The COSA Agreement for the PGA golf areas stipulates additional water quality protection measures above those required by the TCEQ that will protect the quality of storm water leaving the Property. In addition, the COSA Agreement limits the amount of water utilized by the Proposed Alternative and requires all water to be supplied and controlled by SAWS. Thus, any impacts associated with Master Phase II increasing withdrawal of water from the Edwards Aquifer will be avoided, minimized, and/or mitigated as discussed above. Indirect threats to Aquifer-dependent species from water withdrawal can be effectively addressed on a regional, collective basis, and SAWS and the EAA are the two entities primarily responsible for implementing a regional conservation effort. EAA is currently drafting a regional habitat conservation plan, and if approved, will address this issue. However, EAA has limited authority to control water quality. As such, the proposed development will maintain water quality by complying with the terms of the SAWS agreement, and through application of BMPs in addition to certain other local water quality controls for similar projects. The proposed site development should not significantly affect water quality parameters such as dissolved oxygen, bacteria levels, or other water quality parameters in downstream surface water segments. Since effects to onsite recharge and groundwater quality of the Glen Rose Formation from this project are not anticipated to be significant, the potential effects to the Edwards Aquifer should be negligible.

5.1.2.10 Socioeconomic Environment

The Proposed Alternative will result in an increase in jobs in the area. This alternative may also result in an increase in supportive businesses such as stores and restaurants. Along with an increased tax base, there may also be an increase in the need for road repairs and other public services in the areas. Off-site socioeconomic impacts are expected.

Once construction is completed, permanent jobs will continue in association with the operation of the resorts and other uses in the community. A hotel is estimated to employ approximately 900 employees with an annual operating payroll of $20,000,000. A golf course is estimated to employ approximately 150 employees with an annual operating payroll of approximately $5,000,000.

Additional benefits in the form of taxes would result. The projected property value to be taxed in 15 years is estimated to be $1,300,000,000. This results in estimated annual tax revenues for the COSA,

school districts, Bexar County, and the Hospital District of approximately $39,000,000 in property taxes and approximately $8,000,000 in hotel/motel taxes, if applicable. The hotels and golf courses would also generate significant sales tax revenues.

The construction of the hotels and golf courses would bring additional visitors, conventions, and golf tournaments to San Antonio. The local economic impact from spending by such hotel and golf visitors is estimated to be $180,000,000 annually.

5.1.3 Cumulative Impacts Analysis Overview

As defined in CEQ regulations (40 CFR §1508.7), "cumulative impact" is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The following is a general overview of the cumulative impacts analysis undertaken in connection with the preparation of this EA/HCP. The cumulative impacts analysis for the Cibolo Canyon project considers the following: 1) the anticipated area within which the effects of the project will be felt; 2) impacts in that area resulting from the proposed project; 3) other actions – past, proposed, and reasonably foreseeable – that have had or are expected to have impacts in the same area; 4) impacts or expected impacts from these other actions; and 5) the cumulative impact that can be expected if the individual impacts are allowed to accumulate. Information pertinent to this analysis is not contained wholly within any particular chapter or section of this EA/HCP, but appears at various locations throughout the document and the overall record of this action. The purpose of this Section 5.1.3, however, is to provide a brief overview and summary of the analysis undertaken.

Area of Impacts

The area within which effects of the development of the Cibolo Canyon Property will be felt will vary, from resource to resource. Therefore, the expected area of impact will be discussed generally in this overview and further addressed for specific resources within the Alternatives sections (5.1- 5.4). Although each alternative would have different direct impacts, similar cumulative impacts are anticipated for all alternatives. The Cibolo Canyon Property is located within Precinct 3 of Bexar County. This is a growing, suburbanizing area of northern Bexar County. While the precise area within which project impacts may be felt varies from resource to resource, Bexar County, Precinct 3 is considered an area of sufficient scale within which to consider cumulative impacts on most, if not all, resources (Figure 9 - county's precincts and identifying Cibolo Canyon).

Project Impacts

Direct and indirect effects of the Proposed Alternative under consideration are described in previous sections of this EA/HCP.

Summary of Other Actions

The San Antonito-Bexar County MPO in coordination with other local governmental agencies prepared the Mobility 2025 Metropolitan Transportation Plan (San Antonio-Bexar County MPO 1999). This document is the MPO's basic framework for continuous, comprehensive, and coordinated regional transportation planning efforts for the next 25 years. MPO's comparison of the 1995 population and employment densities to the 2025 forecasts (from the demographic forecasting model), predict residential and employment developments to continue to grow northward in Bexar County. The population of Bexar County is expected to increase 27.6 percent between 2000 (~1.4 million) and 2010 (~1.78 million) and double before 2040 (~2.8 million) (City of San Antonio Planning Department 2002).

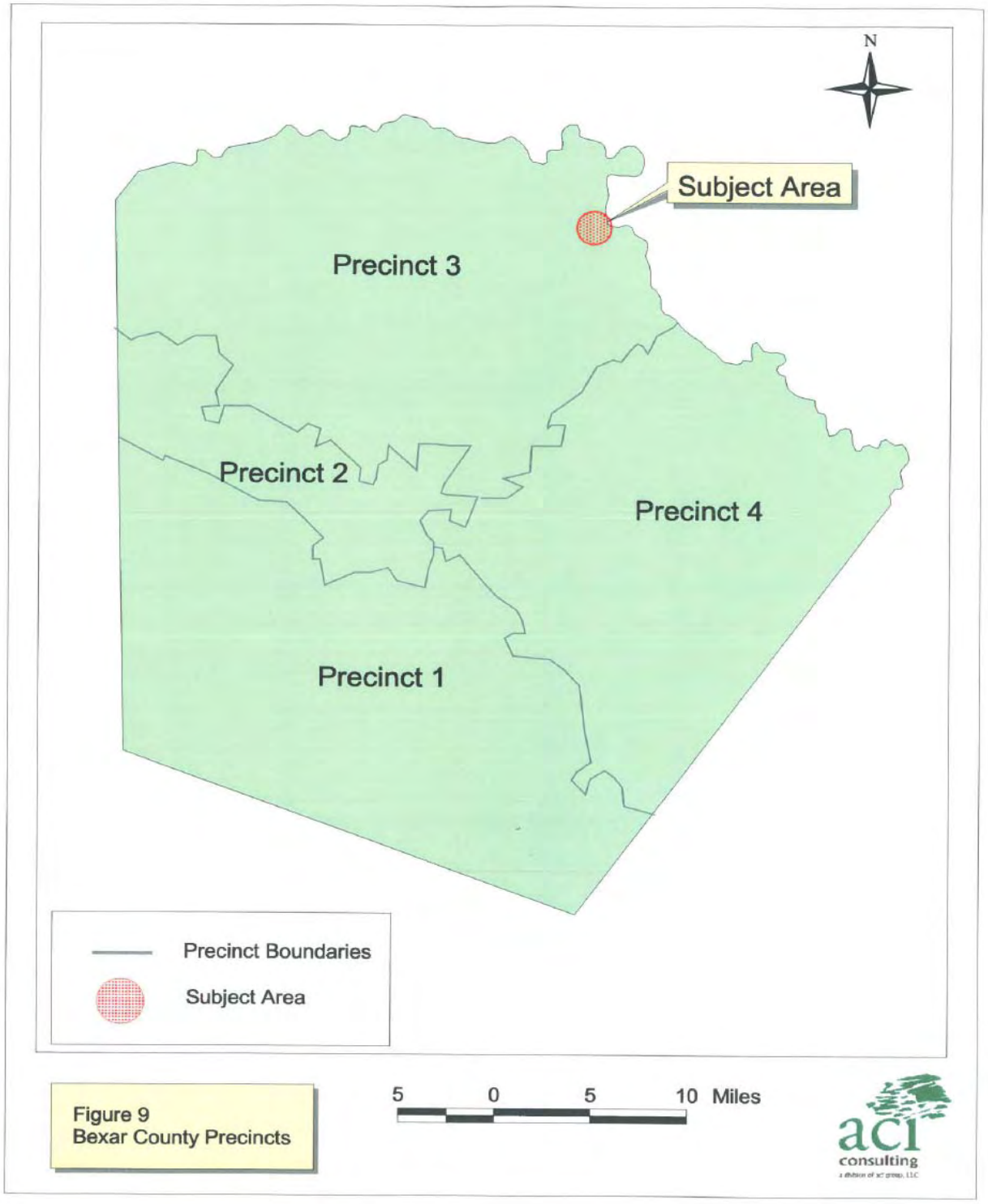


Figure 9
Bexar County Precincts

In response to anticipated population growth and transportation needs Bexar County citizens voted to approve twelve road and bridge improvement projects valued at over $40,000,000 in November 2003. These projects provide for the reconstruction of roads and improvements in areas of high growth, which support existing and proposed schools, improved driving and safety conditions, as well as supporting the economic development of Bexar County. Two of these road improvement projects, Borgfeld and Bulverde roads, are located within Precinct 3 and are scheduled for completion in the second and fourth quarters of 2007, respectively (Bexar County 2004).

In addition to the transportation improvement projects, many new housing developments exist, are under construction, or are platted within Precinct 3. This includes most of the areas surrounding the Cibolo Canyon Property (Figure 10—identifying the surrounding developments):

- Clear Springs Park to the north,
- Encino Park to the west,
- Sendero Ranch to the west and northwest,
- Indian Springs to the northwest,
- Fossil Creek to the south,
- Fossil Ridge to the southwest, and
- Century Oaks to the east,
- other large-lot properties that exist to the east and southeast, and several large-lot properties are located along the border of the Property to the east and northeast.

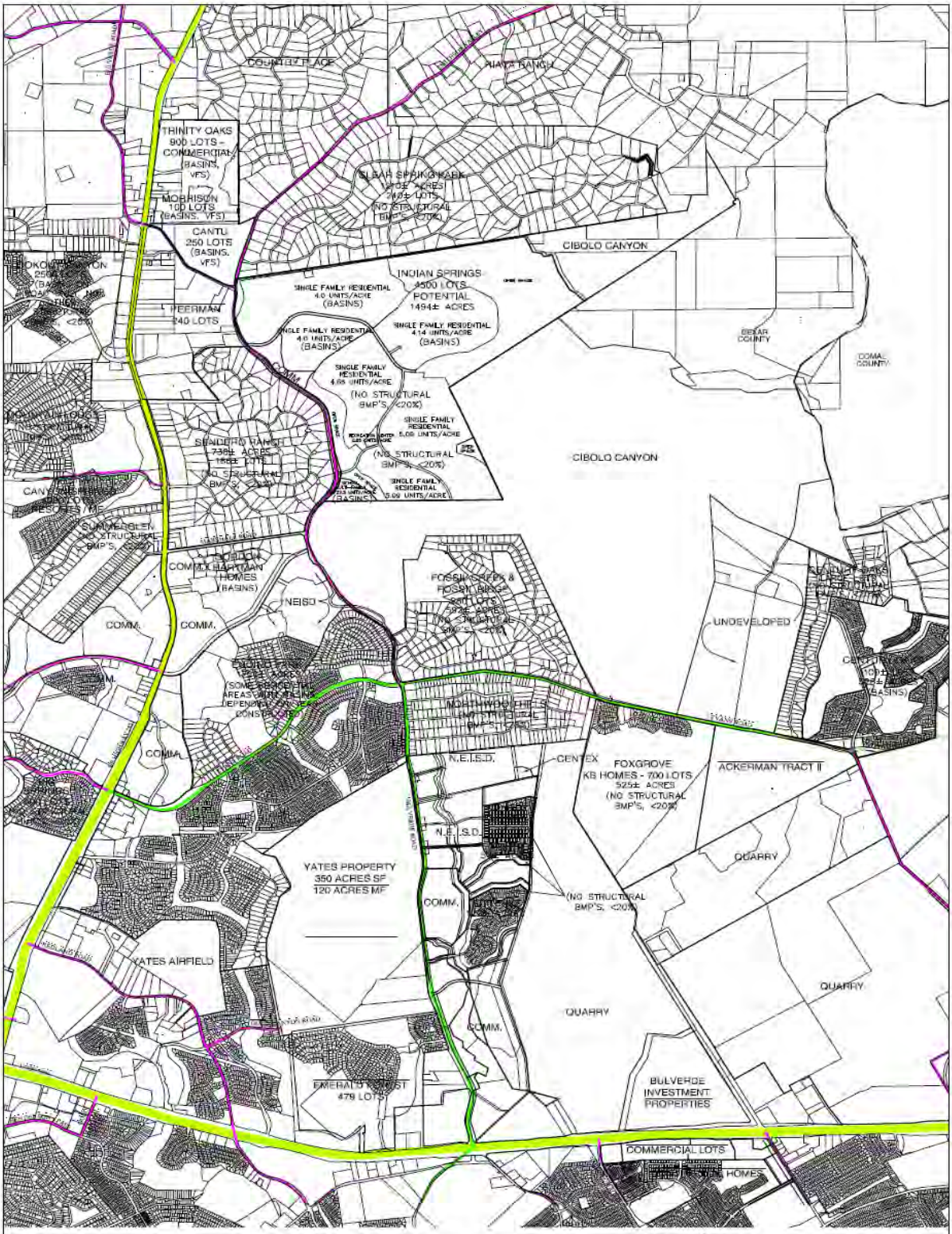
Impacts from Other Actions (individual and accumulated)

The planned and existing development around the Evans Road Tract portion of Cibolo Canyon and the planned development of the Evans Road Tract itself (Master Phase I and II) are typical of the suburbanization density occurring throughout northern and western Bexar County. The cumulative impact of these master planned communities includes the conversion of ranchland to suburbanized areas across much of Precinct 3 and northwestern Bexar County, with resulting reductions in overall open space and potential urbanization impacts on water and air quality, noise levels, and available habitat for the GCWA and other local wildlife. The average density of this suburbanization is one general measure of its potential effect on a wide variety of resources.

While it is expected that most of the area will become urbanized in the foreseeable future, this urbanization will likely occur at the relatively low densities that are typical of these suburban areas.

A recent analysis of existing and projected impervious cover within this region estimates that the Recharge Zone within Bexar County is approximately 22.3 percent impervious cover (see 5.1.3.2). Under the Proposed Alternative, the site would be 15 percent or less impervious cover, representing approximately 3.5 percent of the total existing and planned conversion of undeveloped land to impervious cover (22.3 percent) within the Recharge Zone in Bexar County. After completion of the proposed development and all development presently planned for this area, the total impervious cover for the Bexar County recharge zone would be the 22.3 percent figure, above, with 90.5 percent of the area (71,803 acres (29,057 hectares)) involved in development of various intensities and 8,446 acres (3,418 hectares) remaining undeveloped. Of the developed acreage it is expected that 15,655 acres (6335 hectares) will be floodplain and community green spaces. (Pape Dawson 2004)

Potential cumulative impacts to various resources will be mitigated to a degree by existing regulatory and open space programs. For example, both the COSA and the TCEQ regulate development for the protection of water quality. In addition, areas of endangered species habitat are subject to protection under the ESA, and, in fact, the developers of the Indian Springs project



REGIONAL AREA MAP

VFS = VEGETATIVE FILTER STRIP
NOTE: ALL COMMERCIAL SITES ASSUMED TO HAVE BASINS
NOTE: ACREAGE IS APPROXIMATE AND BASED ON INFORMATION FROM BEXAR APPRAISAL DISTRICT

SCALE : 1"=3000'
0' 3000' 6000'

PAPE-DAWSON ENGINEERS
1959-2005 • 40 YEARS OF EXCELLENCE

FIGURE 10

immediately adjacent to Cibolo Canyon have entered into a settlement with the Service establishing over 300 acres of preserve for the GCWA. In addition, the COSA, working with entities like the Trust for Public Land and the Bexar Land Trust, implements active programs for the preservation of open space in the recharge and contributing zones of the Edwards Aquifer. One such program, referred to as Proposition 3, has resulted in the preservation of several thousand acres of open space.

Although much of this property is surrounded by existing or planned development, the conserved areas under the Proposed Alternative are adjacent to other areas either already established as open space (e.g., the Indian Springs conservation area) or considered un-developable due to topographic and flood plain issues (as much as 650 acres (263 hectares)). The North Triangle Tract and portions of the Wolverton and Evans Road Tracts to be left undeveloped and preserved in perpetuity total 760 acres (Figure 11). Combining the 760 acres of conservation area of Master Phase II with the more than 300 acres of adjacent open space (Indian Springs) and the potential 650 acres of land considered un-developable, would provide as much as 1,700 acres (688 hectares) of contiguous wooded open space (Figure 11). This large block of contiguous wooded acreage would be available for use by the GCWA and other local wildlife and would also have beneficial effects on regional air and water quality. The proposed development of the Cibolo Canyon Property provides an opportunity also to conserve a large block of ecologically valuable open space in perpetuity, which will mitigate to a degree the ongoing cumulative effects of urbanization in the area.

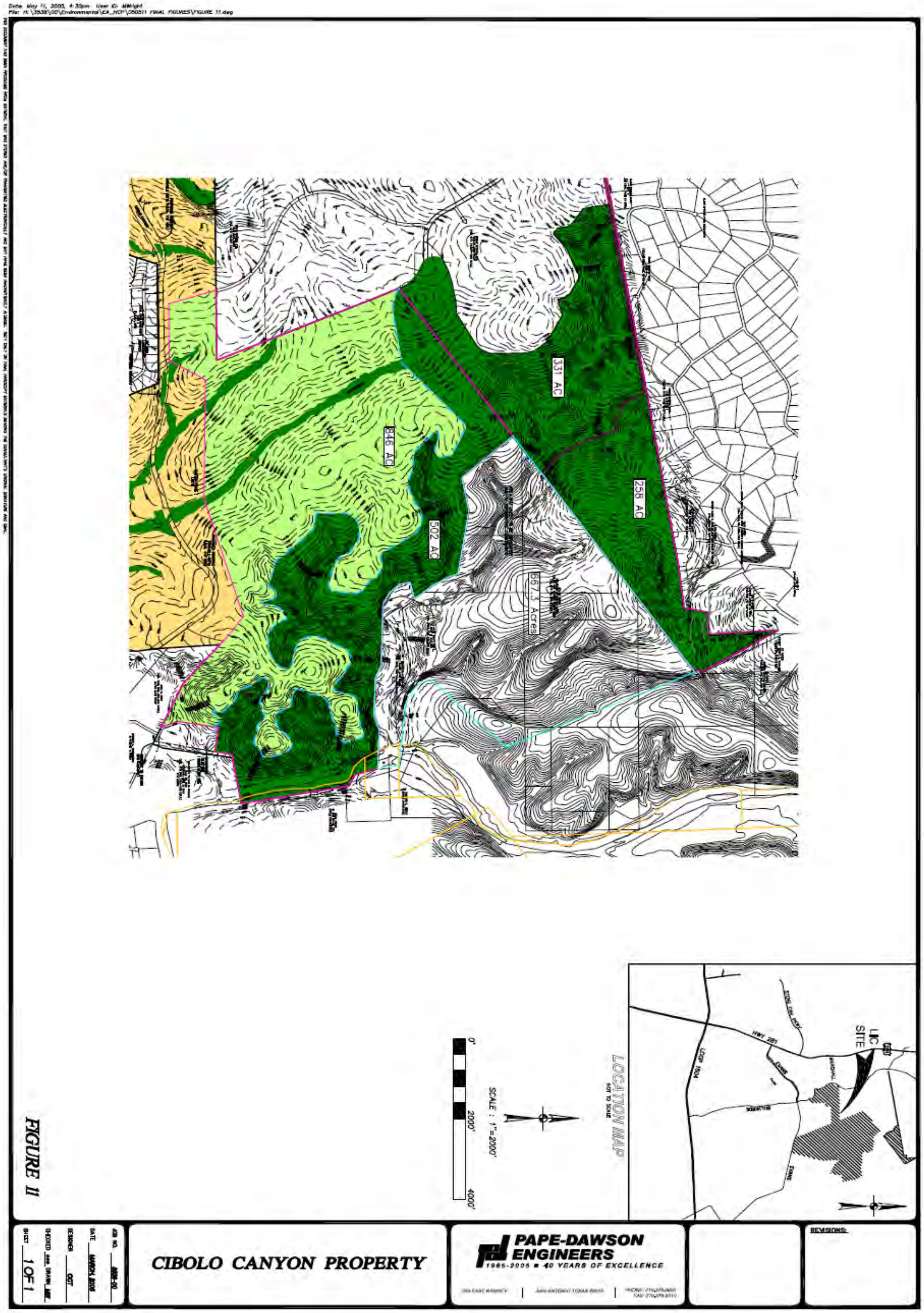
5.1.4 Cumulative Impacts Analysis for the Proposed Alternative

5.1.4.1 Vegetation

Portions of the approximately 1,896 total acres (767.3 hectares) within Master Phase I and II of disturbed vegetation would contribute to the cumulative disturbance in Bexar County. The dedication of 940 acres (380.4 hectares) of open space and the Conservation Area within Master Phase I and II project areas would minimize significant cumulative impacts to vegetation.

Based on an analysis prepared by Pape Dawson Engineers, Inc (2004) entitled Cumulative Impact Report, August 2004, which studied impervious cover estimates for existing developments and planned developments in the San Antonio area, it is estimated that the Recharge Zone within Bexar County is approximately 22.3 percent impervious cover (see 5.1.3.10). Under the Proposed Alternative, the site would be 15 percent or less impervious cover; therefore, the cumulative impact on vegetation from the development under the Proposed Alternative would represent approximately 3.5 percent of the total existing and planned conversion of vegetation to impervious cover (22.3 percent) within the Recharge Zone in Bexar County.

According to the 2003 American Forests' Urban Ecosystem Analysis, tree canopy cover within the San Antonio area and the Edwards Aquifer Recharge Zone (EARZ) is currently 27 percent and 43 percent, respectively (American Forests 2003). Heavy tree canopy cover (areas with 50 percent or greater tree cover) has decreased by 22 percent in San Antonio within the last decade. The American Forests' analysis recommends maintaining an average 35 percent tree canopy citywide to aid in removing air pollutants and reducing storm water runoff (recommendations range from 15-45 percent depending on land use). The majority of the heavy tree canopy cover within the Property will be included in the 760 acres of GCWA mitigation and other open space. Overall tree canopy after completion of the proposed alternative will remain over 50 percent, exceeding the 45 percent recommended tree canopy within the EARZ.


331 AC
258 AC
546 AC
502 AC
LOCATION MAP
NOT TO SCALE
SCALE : 1"=2000'
0'
2000'
4000'
FIGURE 11
CIBOLO CANYON PROPERTY
PAPE-DAWSON ENGINEERS
1965-2005 ■ 40 YEARS OF EXCELLENCE
REVISIONS:
SHEET 1 OF 1

A City Public Service electric transmission line project is underway on the Cibolo Canyon Property, generally along its north and easterly edges and extends both southeast and west from the site. City Public Service is presently consulting with the Service regarding this project. It is unrelated to the proposed alternative.

5.1.4.2 Wildlife

The proposed action would contribute to a cumulative reduction of habitat for some wildlife species when added to impacts from development and other land use changes in Bexar County. Wildlife species better adapted to urban and suburban habitat (generalists) may increase and exacerbate displacement of species intolerant to development, which may locally decrease. However, a viable amount of wildlife habitat will be maintained through open space and mitigation (940 acres) within Masters Phase I and II.

5.1.4.3 Threatened or Endangered Species

Golden-cheeked Warbler

Cumulatively, the proposed action may contribute to take of the GCWA and will reduce the overall habitat in Bexar County, particularly when added to other section 10(a)(1)(B) incidental take permits that may be issued by the Service and for activities of other developments that have not obtained authorization under the ESA.

To date, no incidental take permits for the GCWA have been issued in Bexar County. In the Travis/Williamson/Hays County areas, 117 incidental take permits and eight Biological Opinions for the GCWA have been issued. These 117 permits cover approximately 20,000 acres (8,094 hectares). This acreage reflects the total area of properties and not an estimate of "take" in terms of habitat. As such, the total area of impacted GCWA habitat is substantially less. Additionally, much of this area is included within the 633,000-acre (256,172 hectares) area in Travis County covered by the Balcones Canyonlands Preserve regional 10(a)(1)(B) permit.

According to the GCWA Recovery Plan (Service 1992), there are eight regions (recovery units) identified for GCWA recovery. The Property is located within recovery unit 6. The 1992 GCWA recovery plan requires that sufficient GCWA breeding habitat be protected to ensure the continued existence of at least one viable, self-sustaining population in each of the eight regions. Currently within recovery unit 6, the GCWA population utilizing Government Canyon State Natural Area (SNA) is being protected and monitored. Surveys conducted at Government Canyon SNA by Texas Parks and Wildlife Department (TPWD) have resulted in the location of approximately 30 occupied GCWA territories, and monitoring of this population will continue (TPWD 2002). Of these surveys, most have been informally conducted, and only on portions of the Property. Only one thorough survey occurring on a small portion of the Property has been completed. It is therefore likely these 30 territories only represent a small percentage of the total number. Within recovery unit 6, ten years of survey data on the Camp Bullis Training Site show a stable to slightly increasing GCWA population between 1991 and 2000 (Fischer and Guilfoyle 2001).

The recovery plan however, may be revised in the future. In response to this, and based on Landsat data and suggestions from the GCWA Recovery Team, during a 1998 meeting, the Service redrafted the GCWA Recovery Unit boundaries. In 2003, maps with the proposed boundary changes were sent to all Golden-Cheeked Warbler Recovery Team members for comment. These boundaries have not yet been officially approved but are likely to be incorporated into any revision of the GCWA Recovery Plan. The new configuration would encompass the same total area within six recovery units instead of eight. Eight viable populations would still be necessary before down-listing would be considered. One viable population would be required for each of four units and two viable populations would be necessary in the two units considered to encompass the core range of the species. The two core revised recovery units are

3 and 5. Recovery unit 5 encompasses Bexar and Comal counties, almost all of Kendall County, the eastern portions of Bandera, Kerr, and Medina counties, southern portions of Blanco and Hays counties, and a very small portion of southeastern Travis County. The Cibolo Canyon Property is located within the revised, but not approved, recovery unit 5.

In 1996 and 2002, a population viability analysis for GCWAs was conducted (Service 1996, Alldredge et. al. 2002). The 2002 study recommended that unless a metapopulation is determined to exist, large patches (>3,000 breeding pairs) should be maintained for a viable GCWA population over a 100-year timeframe. These studies also concluded once a population fell below 1,000 breeding pairs the probability of extinction increased dramatically. Additional studies are currently underway to determine whether or not GCWA habitat patches large enough to sustain two populations with over 3,000 breeding pairs each are feasible in this recovery unit and if a metapopulation exists within the GCWA.

As of 1988, there were an estimated 814,220 acres (329,503 hectares) of potential GCWA habitat available (from Wahl et. al. 1990). Later studies using Landsat data (McKinney and Sansom 1995, Diamond and True 1999) estimated a total of 1,271,236 acres (514,451 hectares) to 1,349,066 acres (545,948 hectares) of potential GCWA habitat range wide. Based upon 1996 and 1997 satellite imagery Diamond and True (1999) estimated there were 61,132 acres (24,740 hectares) of warbler habitat in Bexar County, of which approximately 20,479 acres (8,288 hectares) were in patches greater than 618 acres (250 hectares). No more recent analysis on the amount of GCWA habitat in Bexar County exists. However, these studies are currently underway.

Both authorized and unauthorized destruction of GCWA habitat in the San Antonio area has occurred over the years. Clarke (1985) observed a loss of woody cover at an 11.6 percent annual rate in the San Antonio area, and a 5.3 percent annual rate in the urban corridor between Austin and San Antonio for the period 1973 to 1979. Similarly, Wahl et al. (1990) observed an annual rate of loss of 4.4 percent in the same area (Canyon Lake) for GCWA habitat. It is likely these rates have continued since these studies, and that the estimates of habitat identified above are likely substantially less.

For the purposes of the proposed alternative cumulative impacts analysis, the possibility exists for the loss of other areas of habitat near the Project as growth and development continues. The loss of habitat possible under the proposed alternative and over time in the Project vicinity does not rise to the level of significance, particularly in light of the permanent habitat conservation proposed to compensate for habitat loss. The Project and its vicinity have not been specifically identified in the recovery plan as vital for the recovery of the GCWA and, in fact, the preservation associated with the Project and the prior Indian Springs settlement creates a third opportunity in Bexar County for large-scale conservation of GCWA habitat. In the context of cumulative impacts to GCWA recovery, the potential loss of habitat associated with the Project must be assessed against the thousands of acres of habitat remaining in Bexar County and the local recovery unit, and that represents only a tiny fraction of the habitat remaining in the species range. Similarly, the potential loss of up to eight territories of GCWA under the proposed alternative are a small fraction of GCWA population, last estimated at approximately 13,800 territories [pairs] (Service 1992).

Karst Invertebrates

No endangered karst invertebrates were identified on-site. No Service designated Critical Habitat for karst invertebrates exist on-site. Therefore, no cumulative impacts to karst invertebrates are anticipated as a result of the Proposed Alternative.

Edwards Aquifer

As described in Section 3.3.3., 3.7, and 5.1.1.3, regional efforts are expected to address the potential impacts to aquifer-related species from water quantity withdrawals. Regarding water quality issues, COSA, Edwards Aquifer Authority, SAWS, and the State of Texas (TCEQ) all have regulations, standards and BMP requirements in place whose purpose is to preserve water quality in this and other portions of the Edwards Aquifer. These regulations have all increased their requirements for water-quality related improvements for development in recent years. However, the majority of development over the Edwards Aquifer was constructed prior to the years in which these regulations were promulgated and without any regulations or requirements for BMPs, buffer strips, or similar water quality related improvements. The Proposed Alternative is subject to the COSA Agreement that would place additional restrictions and requirements on the development. See Sections 4.1 and 5.1.1.9 for additional information regarding the best management practices and other measures to be used.

5.1.4.4 Wetlands

Potential impacts to waters of the U.S. within the adjacent Master Phase I area were authorized under nationwide permit 14, issued by the USACE on June 3, 2003. Any impacts to jurisdictional wetlands within the Property would also be subject to authorization from USACE. No cumulative impacts to jurisdictional waters or wetlands are anticipated (see also Section 5.1.1.9).

5.1.4.5 Geologic Features and Soils

No significant cumulative impacts to geology and soils would occur as a result of the Proposed Alternative.

5.1.4.6 Land Use

The proposed action contributes to the conversion of undeveloped land to developed land in the COSA area. However, such development has been contemplated and planned by the COSA in its land use approvals and in the orderly extension of major water and wastewater utilities into this area in the last two decades to serve new growth in this region. No significant off site cumulative impacts to existing or proposed land uses are expected to occur as a result of the proposed action. The majority of the properties adjacent to or in the vicinity of the Cibolo Canyon site are currently developed or have existing master plans for development in varying stages of construction. The primary land use of surrounding properties is single-family residential. For the properties that are developed, or are planned for development near the Cibolo Canyon site, the proposed action will not change or impact the use of those properties. Development of the Property will impact regional traffic loads (See Section 5.1.2.6).

5.1.4.7 Cultural Resources

No significant archeological sites were identified on this property. Therefore, the proposed action will not contribute to a cumulative reduction of archaeological sites that are eligible or potentially eligible for the National Register of Historic Places.

5.1.4.8 Air Quality

The MPO addresses the expected impacts of increased population and transportation needs on Bexar County's air quality. At the time of the study, the San-Antonio Bexar County area was considered by TCEQ as being in "near non-attainment" with the National Ambient Air Quality Standards (NAAQS). To date, San Antonio still holds near non-attainment status for ground-level ozone. Although San Antonio is in compliance with the one-hour ozone standard, it exceeds the eight-hour standard (TCEQ

2004). A Clean Air Plan for the San Antonio Metropolitan Statistical Area was prepared by the AIRC of the Alamo Area Council of Governments. The Plan is designed to enable a local approach to ozone attainment and to encourage early emission reductions that will help keep the San Antonio area in attainment of the 1-hour ozone NAAQS and ensure attainment of the 8-hour ozone NAAQS. The Clean Air Plan also incorporates the Early Action Compact for the San Antonio area. The Early Action Compact protocol was endorsed by EPA Region 6 on June 19, 2002, and is designed to develop and implement control strategies, account for growth, and achieve and maintain the 8-hour ozone standard (AIRC 2002). Attainment with the 8-hour ozone standard is scheduled no later than December 31, 2007. The Cibolo Canyon Property is located in an area of projected growth by MPO and would be subject to all standards of the EPA and the Early Action Compact.

The Proposed Alternative will slightly contribute to degradation of air quality in the San Antonio area primarily through an increase in automobile emissions. The degree of impact will depend upon existing and future air quality requirements for construction activities and automobiles. Significant impacts will likely be offset by the continued trend for increases in regulation of automotive and other emissions as described above.

5.1.4.9 Water Resources and Water Quality

Cumulative impacts to surface water or groundwater as a result of existing development and the proposed action are expected to continue. Unlike much of the existing development within this area, the proposed development will be conducted in accordance with TCEQ rules for development on the Edwards Aquifer Recharge and Contributing Zones, including appropriate use of additional structural best management practices as described elsewhere herein (Sections 4.1 and 5.1.1.9). In addition to the TCEQ requirements, the COSA Agreement stipulates additional water quality control measures for the golf village project. The proposed action represents a small percentage of the total development on the Recharge and Contributing Zones within Bexar County.

Within Bexar County, the Edwards Aquifer Recharge Zone is officially mapped as covering approximately 80,249 (32,476 hectares) acres and the Edwards Aquifer Contributing Zone covers approximately 112,686 acres (45,603 hectares), for a total of 192,935 acres (78,080 hectares). Approximately 2,548 acres within Master Phase I and II of the LIC Property is mapped as being within the Edwards Aquifer Recharge Zone. However, extensive on-site geological investigations have shown this mapping to be incorrect for this property. This mapped acreage represents 3.2 percent of the Edwards Aquifer Recharge Zone within Bexar County. In actuality, the Property acreage actually located over the recharge zone is zero. Approximately 307 acres within Master Phase II of the LIC property is mapped as being within the Edwards Aquifer Contributing Zone. This mapped acreage represents 0.3 percent of the Edwards Aquifer Contributing Zone within Bexar County. Combined, the property would represent 1.48 percent of the Recharge and Contributing Zone total acreage within Bexar County if the map, which is based on anecdotal information, were correct for this site. The property is located within two of the six Bexar County Recharge and Contributing Zone watersheds, the Salado Creek watershed and the Cibolo Creek watershed. The Salado Creek watershed within Bexar County consists of approximately 65,774 acres (26,618 hectares), of which approximately 1,736 acres (702 hectares) (or 2.6 percent) is within the LIC property. The Cibolo Creek watershed within Bexar County consists of approximately 41,156 acres (16,656 hectares), of which approximately 1,119 acres (453 hectares) (or 2.7 percent) is within the LIC property.

Approximately 45 percent of the Recharge Zone within Bexar County is currently developed and an additional 24.5 percent is planned for development through the recent submittal of master plans and development plans to the COSA or other review agencies. Approximately 19.5 percent of the Recharge Zone in Bexar County is dedicated as open space and preserve lands, such as Camp Bullis or Government

Canyon SNA, or is major floodplain areas, such as behind the San Antonio River Authority's Salado Creek flood dams (Pape Dawson 2004). Therefore, approximately 10.5 percent of the Recharge Zone within Bexar County remains to be planned for development or preservation, and it is only this small percentage that will have been or will be developed with any significant provisions for storm-water quality treatment.

Based on impervious cover estimates for existing developments and planned developments, it is estimated that the Recharge Zone within Bexar County consists of approximately 22.3 percent impervious cover (Pape Dawson 2004). The total combined Recharge Zone and Contributing Zone acreage within Bexar County is estimated to be approximately 13.68 percent impervious cover, excluding the proposed action. Under the Proposed Alternative, the site would be 15 percent or less impervious cover. Development of the Proposed Alternative increases the overall impervious cover on the Edwards Aquifer Recharge Zone and Contributing Zone within Bexar County, as mapped, by 0.37 percent. The total impervious cover within the recharge zone as it is presently mapped after this development would be 45.37 percent. However, as stated above the official map has been shown to be incorrect as it specifically relates to this site, so there will be no increase of impervious cover over the recharge zone by the construction of Master Phase II.

The TCEQ requires developments on the Recharge and Contributing Zones to control discharge of pollution after construction either through the use of structural best management practices such as sedimentation/filtration basins, or by limiting the impervious cover to less than 20 percent of the site.

In addition to the requirements of the TCEQ, the COSA Agreement stipulates additional water quality protection measures that will regulate the quality of storm water on-site as well as storm water runoff leaving the Property from the golf course construction and operation. In addition, the COSA Agreement limits the amount of water utilized by the Proposed Alternative and requires all water to be supplied and controlled by SAWS. Surface water and groundwater quality monitoring conducted on site, will identify potential concerns from a golf village golf course construction and operation that can then be addressed by land management practices to prevent on-site and off-site impact to water quality, per the COSA Agreement.

5.1.4.10 Socioeconomic Environment

The Proposed Alternative will contribute to the increase in population and traffic in northern Bexar County, which, over time will become even more urbanized as new development continues to occur. The Proposed Alternative will also result in an increase in jobs in the area (See Section 5.1.1.10). This alternative may also result in an increase in supportive businesses such as stores and restaurants. There may also be an increase in the need for road repairs and other public services in the area, along with an increased tax base.

5.2 Alternative Two – Existing, approved Full Development Plan on Evans Road Tract with Wolverton Tract and The North Triangle Tract

5.2.1 Direct Impacts

Disturbances resulting from the development and construction of Master Phase II will disturb vegetation on-site and reduce habitat for wildlife, including the destruction and modification of GCWA habitat. Implementation of Alternative Two is expected to offset a portion of such impacts through avoidance and/or minimization efforts in some steep canyon areas identified as GCWA habitat.

5.2.1.1 Vegetation

Alternative Two would remove, alter, or further fragment approximately 1,535 acres (621 hectares) of vegetation. Within the Development Area, native vegetation will be modified and replaced with homes, structures of various sorts, and landscaped areas. Landscaping will be performed with native vegetation.

5.2.1.2 Wildlife

Wildlife within those areas planned for development would largely be displaced to adjacent areas. Such displacement could result in increased competition for breeding, nesting, and foraging habitat, as well as cover, in adjacent undisturbed habitat. Outside of designated open space, the promotion of urban wildlife species and human activities related to the proposed development may result in the decline of more specialized species in general.

5.2.1.3 Threatened or Endangered Species

Golden-cheeked Warbler
The Service believes the entire Property provides habitat for the GCWA. This is further discussed in Section 5.1.1.3. Alternative Two is expected, over time, to result in clearing of 1,535 acres of GCWA habitat. The encroachment of noise and other activities within close proximity to GCWA habitat, along with the introduction or increase of predator species (e.g., scrub jays, cats), and increase of species that may compete with the GCWA for shelter, forage and nesting resources (such as brown-headed cowbirds) are potential indirect impacts of adjacent development. Alternative Two would affect approximately 1,535 acres of varying quality GCWA habitat. Upon completion of Alternative Two, the viability of all GCWA habitat within the Cibolo Canyon Property is uncertain. Therefore, these potentially impacted GCWA habitat areas would be mitigated off-site.

Black-capped Vireo
Habitat evaluations conducted by Horizon and aci concluded that the vegetation of the Property lacks the requisite shrub density and shrub species regularly occupied by the BCVI (aci 2002a). No impacts to the BCVI are expected as a result of Alternative Two. The Applicant has not requested take coverage for the BCVI and none would be granted by issuance of the permit. No Critical Habitat has been designated for this species, therefore, none will be impacted.

Karst Invertebrates
The Property is located in the Stone Oak karst fauna region. Of the nine endangered karst or cave-dwelling invertebrates known to occur in Bexar County, three species are known to occur in Stone Oak karst fauna region. The Property is not designated by the Service as Critical Habitat for any of the endangered karst invertebrates. Extensive karst surveys of the Property have not revealed the presence of any endangered karst invertebrate habitat or species (see Section 3.5 and 5.1.1.3).

Edwards Aquifer Species
The Service has expressed concern that the combined current level of water withdrawal for all consumers from the Edwards Aquifer could adversely affect aquifer-related species located at Comal, San Marcos, Fern Bank, and Hueco Springs during low flows, and that effects on the Aquifer may also affect the Cagle's map turtle (a candidate for listing). Regional efforts are expected to address the potential impacts to aquifer-related species from water withdrawals (see Section 3.3.3).

5.2.1.3.1 Assessment of Take

Alternative Two is expected to result in development of 1,517 acres (614 hectares) of the overall 1,606 acres. Upon completion of Master Phase II, the viability of GCWA habitat within developed areas of the Property is uncertain for the reasons stated in Section 5.1.1.3.1. Therefore, this modified GCWA habitat will be mitigated off-site.

5.2.1.3.2 Assessment of Take of Other Listed Species

The Property has been evaluated for the federally-listed threatened or endangered species discussed under Section 3.3 above. Other than evidence of use of portions of the Property by the GCWA, there is no evidence of any use by any other threatened or endangered species on the Property (see Sections 3.3.1, 3.3.2, 3.3.3, and 5.1.1.3). It appears that no listed species, other than the GCWA, are likely to be present on or adjacent to the Property, and therefore, it is unlikely that any such species will be taken or affected by development and operation of Alternative Two.

5.2.1.4 Wetlands

Impacts to wetlands would be similar to those described under the Proposed Alternative.

5.2.1.5 Geologic Features and Soils

Impacts to geologic features and soils would be similar to those described under the Proposed Alternative.

5.2.1.6 Land Use

New development on the Property will consist of commercial and residential development. The proposed action is comparable and compatible with current land use in the area. Under Alternate two, no open space would be created in conservation easements but approximately 100 acres of park and recreational areas would be created.

5.2.1.7 Cultural Resources

All archaeological sites will be directly impacted. However, the sites have very little research value and represent negligible cultural resources. No sites that are eligible or potentially eligible for the National Register of Historic Places will be impacted.

5.2.1.8 Air Quality

Impacts to air quality would be similar to those described under the Proposed Alternative.

5.2.1.9 Water Resources and Water Quality

Impacts to water resources and water quality would be similar to those described under the Proposed Alternative in 5.1.1.9 except that, annual water demand for Alternative Two is estimated to be 8,711 equivalent dwelling units or 2,613,300 gallons per day (average flow).

5.2.1.10 Socioeconomic Environment

The proposed development, construction, and occupation of the Property would result in construction and operation of residential development with attendant roads and utilities on almost all portions of the Property. Development of this Property would provide additional residential areas.

Socioeconomic benefits in the form of construction jobs will occur when the project is being developed. Additional benefits in the form of increased tax base would result from development of Alternative Two. The projected property value to be taxed in 15 years is estimated to be $543,600,000. This results in estimated annual tax revenues in 15 years for the COSA, school districts, Bexar County, and the Hospital District of approximately $16,308,000 in property taxes. The estimated annual tax revenue in 25 years is approximately $27,718,000 in property taxes.

5.2.2 Indirect Impacts

5.2.2.1 Vegetation

Indirect impacts to vegetation would be similar to those described under the Proposed Alternative.

5.2.2.2 Wildlife

Indirect impacts to wildlife would be similar to those described under the Proposed Alternative.

5.2.2.3 Threatened or Endangered Species

Indirect impacts to threatened or endangered species would be similar to those described under the Proposed Alternative.

5.2.2.4 Wetlands

Indirect impacts to wetlands would be similar to those described under the Proposed Alternative.

5.2.2.5 Geologic Features and Soils

Indirect impacts to geologic features and soils would be similar to those described under the Proposed Alternative.

5.2.2.6 Land Use

Indirect impacts to land use would be similar to those described under the Proposed Alternative.

Alternative Two will increase traffic on area roadways. At full build-out, this Alternate is projected to result in peak hour traffic of 7,124 a.m. peak hour trips and 8,888 p.m. peak hour trips with a total of 83,404 daily trips. Mitigation of existing roadways and existing intersections will be warranted and could be provided in accordance with the COSA Traffic Impact Analysis Ordinance.

5.2.2.7 Cultural Resources

Indirect impacts to cultural resources would be similar to those described under the Proposed Alternative.

5.2.2.8 Air Quality

Indirect impacts to air quality would be similar to those described under the Proposed Alternative.

5.2.2.9 Water Resources and Water Quality

Indirect impacts to water resources and water quality would be similar to those described under the Proposed Alternative.

5.2.2.10 Socioeconomic Environment

Indirect impacts to socioeconomic environment would be similar to those described under the Proposed Alternative.

5.2.3 Cumulative Impacts Analysis

A general overview of cumulative impacts is included as Section 5.1.3.

5.2.3.1 Vegetation

The approximate 2,585 total acres (1046 hectares) of disturbed vegetation within Master Phase I and II would contribute to the cumulative disturbance of these vegetation types in Bexar County from development and other land use changes of all kinds. The dedication of 269 acres (108.9 hectares) of open space within Master Phase I and II project areas would help minimize significant cumulative impacts to vegetation. However, this alternative would remove and/or alter more vegetation than the Proposed Alternative or Alternative three.

Under Alternative Two, the site is estimated to be 50 percent impervious cover, which represents approximately seven percent of the conversion of vegetated lands to impervious within the mapped Recharge Zone in Bexar County.

Overall tree canopy for the Property would likely be less than the recommended 45 percent tree canopy for the EARZ by American Forests (American Forests 2003).

5.2.3.2 Wildlife

Cumulative impacts to wildlife would be similar to those described under the Proposed Alternative.

5.2.3.3 Threatened or Endangered Species

Cumulatively, the proposed action may contribute to take of the GCWA and will reduce the overall habitat in Bexar County, particularly when added to other section 10(a)(1)(B) incidental take permits that may be issued by the Service and for other developments that have not obtained authorization under the ESA.

With the exception of the GCWA, cumulative impacts to threatened or endangered species would be similar to those described under the Proposed Alternative (See Section 5.1.3.4). No endangered karst invertebrates were identified on-site nor is there any evidence that they are present on this site. No Service designated Critical Habitat for karst invertebrates exist on-site. Therefore, no cumulative impacts to karst invertebrates are anticipated as a result of Alternative Two.

5.2.3.4 Wetlands

Cumulative impacts to wetlands would be similar to those described under the Proposed Alternative.

5.2.3.5 Geologic Features and Soils

Cumulative impacts to geologic features and soils would be similar to those described under the Proposed Alternative.

5.2.3.6 Land Use

Cumulative impacts to land use would be similar to those described under the Proposed Alternative.

5.2.3.7 Cultural Resources

Cumulative impacts to cultural resources would be similar to those described under the Proposed Alternative.

5.2.3.8 Air Quality

Cumulative impacts to air quality would be similar to those described under the Proposed Alternative.

5.2.3.9 Water Resources and Water Quality

No significant cumulative impacts are expected to occur to surface water or groundwater as a result of Alternative Two. Development will be conducted in accordance with TCEQ rules for development on the Edwards Aquifer Recharge Zone. The total combined Recharge Zone and Contributing Zone acreage within Bexar County, as mapped, is estimated to be approximately 13.68 percent impervious cover, excluding the proposed action. Development of Alternative Two does not increase the overall impervious cover on the Edwards Aquifer Recharge Zone and Contributing Zone within Bexar County. The installation of structural best management practices, using TCEQ's guidance documents for Recharge and Contributing Zones, would result in an effective impervious cover of 20 percent or less. Therefore, the use of structural controls further reduces the impact associated with the proposed action.

5.2.3.10 Socioeconomic Environment

Cumulative impacts to socioeconomic environment would be similar to those described under the Proposed Alternative.

5.3 Alternative Three - Low Density, Large Lot Community – No Golf or Resort

5.3.1 Direct Impacts

Disturbances resulting from the development and construction on the Property will disturb vegetation on-site and reduce habitat for wildlife, including the destruction and modification of GCWA habitat. Implementation of Alternative Three is expected to offset a portion of such impacts through minimal avoidance and/or minimization efforts in areas identified as GCWA habitat.

5.3.1.1 Vegetation

Alternative Three would remove, alter, or fragment the vegetation on the entire Master Phase II area. Under Alternative Three, impervious cover will not exceed 15 percent. Green space will remain largely

within privately owned large lots. The clearing of vegetation associated with the actual construction of Alternative Three will not cause a significant reduction of large blocks of vegetation within the region, mostly due to previous clearing in the area by others and will leave significant green space in private hands. This private property is subject to further fragmentation by subsequent owners of the land, the extent of which cannot readily be gauged, controlled, or reliably enforced.

5.3.1.2 Wildlife

Direct impacts to wildlife would be similar to those described under the Proposed Alternative.

5.3.1.3 Threatened or Endangered Species

Alternative Three has been evaluated for the federally-listed threatened or endangered species discussed under Section 3.3 above. Other than evidence of potential use of the Property by the GCWA, there is no evidence of any other threatened or endangered species on Master Phase II (see Sections 3.3.1, 3.3.2, 3.3.3, and 5.1.1.3). It appears that no listed species, other than the GCWA are likely to be present on or adjacent to Master Phase II, and therefore, it is unlikely that any such species will be taken or affected by development and operation of Alternative Three, nor, therefore, any of the alternatives.

Golden-cheeked Warbler

The Service believes the entire Property provides habitat for the GCWA. This is further discussed in Section 5.1.1.3. The COSA-approved development of the high density plan (by COSA) allows development of the entire Property. Alternative Three is also expected, over time, to result in clearing of 1,517 acres of GCWA habitat. The encroachment of noise and other activities within close proximity of GCWA habitat, along with the introduction or increase of predator species (e.g., scrub jays, cats), and increase of species that may compete with GCWA for shelter, forage, and nesting resources (such as brown-headed cowbirds) are potential indirect impacts of adjacent development. Upon completion of Alternative Three, the viability of all GCWA habitat within the Cibolo Canyon Property is uncertain. Therefore, these potentially impacted GCWA habitat areas would be mitigated off-site.

Black-capped Vireo

Habitat evaluations conducted by Horizon and aci concluded that the vegetation of the Property lacks the requisite shrub density and shrub species regularly occupied by the BCVI (aci 2002a). No impacts to the BCVI are expected as a result of Alternative Three.

Karst Invertebrates

The Property is located in the Stone Oak karst fauna region. Of the nine endangered karst or cave-dwelling invertebrates known to occur in Bexar County, three species are known to occur in Stone Oak karst fauna region. The Property is not designated by the Service as Critical Habitat for any of the endangered karst invertebrates. Extensive karst surveys of the Property have not revealed the presence of any endangered karst invertebrate habitat or species (see Section 3.5).

Edwards Aquifer Species

The Service has expressed concern that the combined current level of water withdrawal for all consumers from the Edwards Aquifer could adversely affect aquifer-related species located at Comal, San Marcos, Fern Bank, and Hueco springs during low flows, and that effects on the Aquifer may also affect the Cagle's map turtle (a candidate for listing). Regional efforts are expected to address the potential impacts to aquifer-related species from water withdrawals (see Section 3.3.3). Impacts to water quality would be similar to those described under the Proposed Alternative.

5.3.1.4 Wetlands

Direct impacts to wetlands would be similar to those described under the Proposed Alternative.

5.3.1.5 Geologic Features and Soils

Direct impacts to geologic features and soils would be similar to those described under the Proposed Alternative.

5.3.1.6 Land Use

Direct impacts to land use would be similar to those described under the Proposed Alternative.

5.3.1.7 Cultural Resources

Direct impacts to cultural resources would be similar to those described under the Proposed Alternative.

5.3.1.8 Air Quality

Impacts to air quality would be similar to those described for the Proposed Alternative.

5.3.1.9 Water Resources and Water Quality

Development and construction of this alternative would be conducted in accordance with TCEQ rules for development on the Edwards Aquifer Recharge and Contributing Zones. No significant impacts to surface water or groundwater are expected due to this alternative. However, in this case results would be partially achieved by lower intensity development and by utilization of the TCEQ rules. One study identified the quantitative difference in constituent concentrations in storm water quality run-off coming from low intensity and high intensity communities has been shown to be small. The variation from event to event on the same test site is greater that the differences from site to site in nearly all cases (John Mancini, Director, National Urban Runoff Program Study Presentation - City of Austin Council Work Sessions transcripts, February 13, 14, and 16, 1984). To be conservative, the impervious cover percentage of this alternative is estimated to be approximately 5 percent less than the Proposed Alternative. An alternative community plan having less than 20 percent impervious cover requires no permanent best management practices per TCEQ rules. However, this plan considered certain BMPs in its concept plan, as well. The annual water demand for the completed Alternative Three is estimated to be 453 equivalent dwelling units or 135,900 gallons (513,702 liters) per day (average flow).

5.3.1.10 Socioeconomic Environment

The proposed development, construction, and occupation of the Property would result in construction and operation of residential development with attendant roads and utilities on almost all portions of the Property. Development of this Property would provide additional residential areas. The construction of this alternative will result in the creation of significantly fewer construction jobs and no permanent jobs compared to the Proposed Alternative. In addition, the tax base created by development of this alternative will be significantly less than that for the Proposed Alternative or Alternative Two.

5.3.2 Indirect Impacts

5.3.2.1 Vegetation

Indirect impacts to vegetation would be similar to those described under the Proposed Alternative.

5.3.2.2 Wildlife

Indirect impacts to wildlife would be similar to those described under the Proposed Alternative.

5.3.2.3 Threatened or Endangered Species

Indirect impacts to threatened and endangered species would be similar to those described under the Proposed Alternative.

5.3.2.4 Wetlands

Proposed on-site sedimentation controls will minimize the amount of sediment introduced into any drainage on-site or downstream. No indirect impacts to jurisdictional waters or wetlands are expected.

5.3.2.5 Geologic Features and Soils

No indirect impacts to geologic or soil resources are expected to occur.

5.3.2.6 Land Use

No significant indirect impacts to existing or proposed land uses are expected to occur as a result of the proposed action. Development of the Property will increase traffic on area roadways. At full build-out, Alternative Three is project to result in 340 AM peak hour trips and 458 PM peak hour trips with a total of 4,335 daily trips.

5.3.2.7 Cultural Resources

No increase in indirect impacts to cultural resources is expected.

5.3.2.8 Air Quality

Indirect impacts to air quality would be similar to those described for the Proposed Alternative.

5.3.2.9 Water Resources and Water Quality

Development will be conducted in accordance with TCEQ rules for development on the Edwards Aquifer Recharge and Contributing Zones. No significant indirect impacts to surface water or groundwater are expected due to Alternative Three.

5.3.2.10 Socioeconomic Environment

Alternative Three will result in an increase in residences in the area. This alternative may also result in an increase in supportive businesses such as stores and restaurants. There may also be an increase in the

need for road repairs and other public services in the area, along with an increased tax base. However, the increase in tax base will be significantly lower than the Proposed Alternative or Alternative Two.

5.3.3 Cumulative Impacts Analysis

A general overview of cumulative impacts is included as Section 5.1.3.

5.3.3.1 Vegetation

The approximate 2,675 total acres (1,083 hectares) of disturbed vegetation within Master Phase I and II would contribute to the cumulative disturbance of these vegetation types in Bexar County from development and other land use changes of all kinds. The majority of the open space within Master Phase I and II project areas would be in the form of privately owned large lots. Alternative Three would not exceed 15 percent impervious cover, providing for more overall green space than the Proposed Alternative or Alternative Two.

The majority of the heavy tree canopy cover within the Property would be unaltered during development under Alternative Three. However, these areas would not be part of a contiguous preserve as in the Proposed Alternative. Overall tree canopy for Alternative Three would likely remain over 45 percent due to the low percent impervious cover (<15 percent) of Alternative Three during construction, meeting the 45 percent recommended tree canopy for the EARZ. However, it can be anticipated that there would be extensive clearing of brush, undergrowth, and vegetation located within the lot boundaries. Homeowners often consider such vegetation to be a fire hazard and undesirable in proximity to homes.

5.3.3.2 Wildlife

The proposed action would contribute to a cumulative reduction of habitat for some wildlife species when added to impacts from development and other land uses in Bexar County. Wildlife species better adapted to urban and suburban habitat (generalists) may increase and exacerbate displacement of species intolerant to development, which may decrease locally. However, because a viable amount of wildlife habitat will be maintained through this large lot plan, the overall cumulative effect is more likely insignificant. Therefore, no significant impacts to wildlife species in Bexar County or the region are expected.

5.3.3.3 Threatened or Endangered Species

Cumulatively, the proposed action may contribute to take of GCWA and will reduce the overall habitat for the GCWA in Bexar County, particularly when added to other section 10(a)(1)(B) incidental take permits that may be issued by the Service and for other developments that have not obtained authorization under the ESA.

With the exception of the GCWA, cumulative impacts to threatened or endangered species would be similar to those described under the Proposed Alternative (See Section 5.1.3.4). No endangered karst invertebrates were identified on-site. Therefore, no cumulative impacts to karst invertebrates are anticipated as a result of Alternative Two.

No Service designated Critical Habitat exists on-site.

5.3.3.4 Wetlands

Cumulative impacts to wetlands would be similar to those described under the Proposed Alternative.

5.3.3.5 Geologic Features and Soils

Cumulative impacts to geologic features and soils would be similar to those described under the Proposed Alternative.

5.3.3.6 Land Use

Cumulative impacts to land use would be similar to those described under the Proposed Alternative.

5.3.3.7 Cultural Resources

Cumulative impacts to cultural resources would be similar to those described under the Proposed Alternative.

5.3.3.8 Air Quality

Cumulative impacts to air quality would be similar to those described for the Proposed Alternative.

5.3.3.9 Water Resources and Water Quality

Development will be conducted in accordance with TCEQ rules for development on the Edwards Aquifer Recharge and Contributing Zones. No significant impacts to surface water or groundwater are expected due to the proposed development.

5.3.3.10 Socioeconomic Environment

Cumulative impacts to socioeconomic Environment would be similar to those described under the Proposed Alternative.

5.4 Alternative Four - No Action

Under this alternative LIC would not develop the Property. As such, no additional impacts to the GCWA would occur as a result. Abandonment of the Proposed Alternative would result in the loss of significant monies invested by LIC in the Property and would be economically impractical for them. In addition, as the owner of the Property, LIC is responsible for maintenance of the Property, including taxes and upkeep. Given the expenses already incurred, LIC would suffer tremendous losses if prevented from developing the Property. Accordingly, this alternative was not considered to be practicable. The sale of the Property for purposes other than development is not economically feasible.

5.5 Public and Agency Participation

To properly coordinate this proposed action, the Applicant has stated it has been actively pursuing public and agency acceptance of the proposed development, and will be making significant efforts through numerous meetings with concerned groups, individuals, public officials, and agencies,.

The following agencies, organizations, and individuals have been or will be consulted or coordinated with during the process of addressing endangered species concerns for the Property:

Robert Pine, Scott Rowin, and Carrie Thompson, U.S. Fish and Wildlife Service
U.S. Fish and Wildlife Service, Albuquerque, New Mexico

Barrett D. Allison, P. E., Environmental & Planning Associates, Inc.
Steve Paulson, Stacy Nipper, aci consulting
Alan Glen, Smith, Robertson, Elliott & Glen, LLP
Cara Tackett, P.E., Ruben Cervantes, P.E., and Phil Pearce, P.G. Pape-Dawson Engineers, Inc.
Lee Sherrod, Horizon Environmental Services
Mike Warton, Mike Warton & Associates
The Nature Conservancy of Texas

Geologic interpretation presented in Sections 3.5, 3.7.2, and 5.1.1.9 was prepared by Philip C. Pearce, P.G., of Pape-Dawson Engineers, Inc. The geoscientist seal affixed to this document on page 84 applies to these referenced sections only.

6.0 HABITAT CONSERVATION PLAN

This section contains LIC's HCP. Implementation of this HCP will, to the maximum extent practicable, minimize and mitigate the impacts of the potential take of GCWAs associated with the Proposed Alternative. LIC has determined, through its previous surveys that no habitat for any endangered karst invertebrates is present, and through inclusion of certain BMPs as discussed in Sections 4.1 and 5.1.1.9, no impacts to any threatened or endangered Edwards Aquifer related species would occur. As such, LIC requests the only species to be covered under the proposed permit is the GCWA.

LIC proposes that the permit issued in connection with this HCP establish a process for issuance of "Certificates of Inclusion". These certificates of inclusion would be provided to purchasers of portions of the Property upon such purchasers signing an "Agreement of Inclusion". This is further defined in Section 6.12 and the Implementing Agreement. This procedure provides a mechanism for assignment of the benefits and responsibilities of the permit, and to ensure implementation of this HCP. These procedures are detailed in the Implementing Agreement.

The 846-acre Development Area of the Proposed Alternative is generally upland areas and is delineated on Figure 7. LIC and the Service have agreed that the upland area consists of varying quality GCWA habitat, while steep canyon areas are generally higher quality habitat. Previously cleared areas are not considered breeding habitat. The structural and compositional vegetative elements of the proposed development site constitute lower quality GCWA habitat than the area proposed for mitigation. Low quality habitat equates to sub-optimal vegetation for GCWA foraging, sheltering, and/or breeding. In comparison, the structural and compositional vegetative elements of the GCWA habitat in the 760 acres of the Conservation Area constitute optimal GCWA habitat as indicated by increased canopy cover, higher densities of GCWAs, and more intense GCWA utilization.

The Service and LIC are in disagreement, to a degree, over the extent of GCWA habitat on this property. LIC and their consultants, aci and Horizon, have independently estimated the total habitat on the Evans Road tract and Wolverton tract from their extensive field work over many years. After analyzing that field work, the Service interprets their results differently than both consultants. Since GCWAs often return to the same nesting territory in subsequent years, appearance of the GCWA in two different, but adjacent areas in two different years may or may not indicate those represent two distinct and separate GCWAs. Nonetheless, LIC's consultants and the Service have agreed that much of the uncleared portions of the Property are habitat for the GCWA despite their differences in analysis of the field data.

6.1 Background and Description of Project Activities

The Proposed Alternative is the result of extensive planning work and iterative processes conducted by and among consulting geologists, ornithologists, and biologists; golf course designers; environmental

professionals; community and home builders of new neighborhoods in this area; local, state, and federal officials and regulators; and many neighborhood groups and special interest groups in the San Antonio area. The Proposed Alternative was chosen after reviewing the provisions of the additional, negotiated water quality safe-guards for golf areas detailed in agreements with the SAWS and the extensive biological and geological studies that have been performed and peer-reviewed for these tracts by various professionals and firms. The work of Pape Dawson Engineering and Horizon Environmental Services, as well as that of Raba Kistner was peer reviewed by the COSA, which enlisted the aid of a noted expert in the field of Engineering Geology, Dr. Christopher Mathewson of the Geosciences Department at Texas A&M University. Upon completion of his review and on-site field work for verification, Dr. Mathewson stated the work was sound and "…of the highest professional caliber." A Geologic Arbitration Committee was then established to monitor future issues of geology, consisting of Mr. Ted Small, USGS; Mr. Edward Miller, Pape Dawson Engineers; Mr. John R. Waugh, II, SAWS; Horizon Environmental Services; aci consulting; and Pape-Dawson Engineering, Inc. and the provisions of the additional, negotiated water quality safe-guards for golf areas detailed in agreements with the SAWS.

The Proposed Alternative has been planned to provide mixed and balanced uses that may include a range of lower to middle to higher-priced housing alternatives in the form of home sites, apartment and other rental properties, and possible different housing types in the contemplated Golf Village area. Most of the community building activities will take place in areas that were ranched and cleared by others for ranching purposes in recent history. The land is characterized by poor and thin soils and re-growth of native and endemic vegetation.

The Proposed Alternative, as it is presently contemplated, has been shaped by concerns for balancing the needs of the community for more open space in an urbanized environment, for the needs of area wildlife for equal consideration and preservation of viable habitat, for the needs of local and future San Antonio residents for new housing and recreational opportunities, and the need of the Applicant for a reasonable return on investment.

6.2 Biological Goals and Objectives - Achieving Mitigation Plan Success

The biological goals of this HCP are to establish a preserve for the GCWA that will provide adequate resources to maintain a population of GCWAs, and to improve the overall biological value of these lands for the GCWA. This will be accomplished through the following objectives: (1) to minimize to the maximum extent practicable all disturbances to the GCWA and its habitat, (2) to mitigate to the maximum extent practicable impacts to the GCWA by the perpetual preservation of 760 acres of relatively higher quality GCWA habitat, and (3) to create, enhance, maintain, and monitor the resulting GCWA preserve. The mitigation plan outlined in Section 6.5 is sufficient to achieve these biological goals and objectives. The mitigation plan is designed to ensure an adequate number of utilized GCWA habitat acres are preserved in perpetuity.

To ensure that biological goals and objectives are achieved, monitoring and maintenance actions would occur on the mitigation lands under the operation and management plan described further in Section 6.6. These actions include: monitoring for the continued presence of GCWAs within the Conservation Area; monitoring changes to GCWA habitat; and managing/manipulating habitat to maintain its suitability for GCWA habitat. Vegetation monitoring would include monitoring levels of browsing pressure and oak seedling recruitment. Revegetation required by this mitigation plan would follow disturbance by construction within the Property (See Section 6.4.2). In addition, populations of problem animals such as deer, feral hogs, and brown-headed cowbirds would be monitored and controlled, if necessary, to prevent impacts to GCWAs and habitat.

6.3 Information Utilized in Determining Appropriate Mitigation

The information utilized in this HCP to determine the appropriate mitigation to offset any incidental take of GCWAs associated with the Proposed Alternative was based on avoiding and then mitigating, to the maximum extent practicable, any remaining impacts to the GCWA. This methodology considers previously occupied GCWA habitat impacted by the Proposed Alternative and provides compensatory preservation of on-site habitat with documented GCWA territories.

Over time, the Proposed Alternative will modify significant portions of the 846 acres of varying quality GCWA habitat. The viability of the GCWA habitat outside this development area may or may not be impacted upon completion of Master Phase II. This is based primarily upon information provided in the aci 2005 memorandum, in which aci discusses the continued presence of GCWAs adjacent to several Austin area golf courses. Regardless, any indirect impacts to the GCWA will be mitigated on-site by the preservation of 760 acres within the Evans Road, Wolverton, and North Triangle Tracts observed to support and expected to continue to support a population of GCWAs.

Assessment of relative quality of GCWA habitat was based on a field examination of the structural and compositional vegetative elements within much of the Property as well as the results from six years of GCWA survey efforts on the Evans Road Tract portion of Master Phase II. A compilation of all available survey information since 1995 is depicted on Figure 4 (Map provided by the Service). As mentioned in Section 6.0, LIC and the Service have agreed that the upland area where the proposed development would occur consists of varying quality GCWA habitat, while the steep canyon areas are generally higher quality habitat. The structural and compositional vegetative elements of the proposed 846-acre development site constitute lower quality GCWA habitat than the area proposed for mitigation. Low quality habitat equates to sub-optimal vegetation for GCWA foraging, sheltering, and/or breeding. In comparison, the structural and compositional vegetative elements of the GCWA habitat in the 760 acres of the Conservation Area constitutes optimal GCWA habitat as indicated by increased canopy cover, higher densities of GCWAs, and more intense GCWA utilization.

The 760-acre Conservation Area occurs adjacent to a 331-acre (134 hectares) block of preserved contiguous GCWA habitat to the west, and a large block of privately-owned potential GCWA habitat to the east, which opens onto extensive ranch lands. Therefore, the GCWA habitat proposed as mitigation in this HCP will be a part of a larger high quality patch of GCWA habitat to remain undisturbed in perpetuity, which is described in further detail in Section 6.5. These areas are shown on Figure 11. Extensive efforts were expended in selecting appropriate mitigation lands (See Section 6.13 2b). The 760-acre Conservation Area would be managed to preserve, maintain, and improve the existing habitat for the benefit of the GCWA under the O&M Plan described further in Section 6.6.

6.4 Proposed Permit Terms and Conditions

The following terms and conditions are proposed by the Permittee to minimize and mitigate the impacts of GCWA taking to the maximum extent practicable. The following are conditions that LIC proposes be included in the permit, if issued. These conditions help identify how LIC has minimized and mitigated impacts to the maximum extent practicable, and how it will enhance the remaining golden-cheeked warbler habitat within the Property. Compliance with these measures will be documented in the annual report described below (Items s. and cc. herein below). LIC has ensured adequate funding will be made available to implement these conditions (Section 6.8).

a. In the Development Area, LIC will minimize clearing for construction of impervious cover to the maximum extent practicable. Areas that are disturbed during construction, but are not occupied by impervious surfaces or landscaped areas will be replanted with native oaks or other native

vegetation. Additionally, vegetation clearing by LIC or its assigns will be consistent with the current practices recommended by the Texas Forest Service to prevent the spread of oak wilt.

b. Clearing activities within, or within 300 feet (91.4 meters) of golden-cheeked warbler habitat will be conducted only during the time of year when the golden-cheeked warbler is not present (Aug 1 through March 1), unless a breeding season survey performed by a U.S. Fish and Wildlife Service-permitted biologist indicates that no golden-cheeked warblers are present within 300 feet of the desired activity. Construction activities within, or within 300 feet of golden-cheeked warbler habitat may be conducted during the time of year when golden-cheeked warblers are present as long as such construction follows permitted clearing, as referenced above, in a reasonably prompt and expeditious manner indicating a continuous activity.

c. Construction period management will meet, at minimum, COSA and TCEQ code requirements and protocols for erosion and silt control; for storage, use, and spill containment; and countermeasures for construction-related chemical and petroleum products. Construction of all wastewater pipelines will be at least as protective as current TCEQ aquifer protection rules.

d. If any caves or subterranean voids are encountered during construction, LIC will have qualified persons respond immediately to evaluate the void with respect to its potential for endangered karst invertebrates. If endangered karst invertebrate species and/or habitat are not present, construction activity may resume immediately upon closing or filling of the void in accordance with standard practices accepted by the TCEQ. If the feature is determined to contain endangered karst invertebrates and/or habitat, the Permittee will immediately cease further clearing and construction activities within the area and contact the Service for further coordination.

e. Prior to any alteration of occupied habitat or direct or indirect take, approximately 760 acres shall be set aside, preserved in perpetuity through conservation easement, and maintained as an on-site golden-cheeked warbler preserve as described throughout the HCP. This area shall be maintained, and managed in perpetuity by a conservation entity or other wildlife management entity approved by the Service. Figures 7 and 11 of the environmental assessment identify the approximate preserve boundary. As the development plans are perfected, slight modifications to the preserve/development line may be required. Additionally, efforts will be made to straighten this line thereby reducing the amount of edge. Modifications to the preserve line will be coordinated with the Service, and in no event will result in less than 760 acres. Appropriate fencing will be constructed to limit and deter unauthorized access to this preserve area, or if fencing is already in place, existing fences will be either replaced or improved as necessary as described herein below in condition j. LIC will ensure the preserve/development line is surveyed and staked prior to the transfer to the conservation entity, and that funds will be available to complete this. The funds necessary to complete the survey are independent of those described in Sections 6.7 and 6.8.

f. The Permittee shall not, without the prior written consent of the Service, which consent shall not be unreasonably withheld or delayed, voluntarily sell, convey, grant an easement upon, or otherwise encumber the Conservation Area in a manner that would materially impact the protected nature of the Conservation Area, or the ability to perform or cause to be performed the operation and maintenance of the Conservation Area, for the benefit of the golden-cheeked warbler. In the event that any portion of the Conservation Area is condemned by a third party for a public purpose and such third party undertakes an action within such condemned area that has the effect of materially impacting the quality of warbler habitat, the Service recognizes that such material impact is not a result of any action of Permittee, and the condemning party would be primarily responsible for any finding of harm or take as a result of the condemnation. The

condemnation award shall be provided to the Service and may be used by the Service, or its designee, to contribute to replacement of the habitat lost as a portion of the Conservation Area, while the condemning authority would be responsible under the then applicable law for compensating for its impacts to the habitat.

g. Prior to development of Master Phase II, LIC will eliminate in perpetuity all livestock grazing within the Conservation Area of the Property. The absence of cattle grazing in these areas would enhance the establishment and proliferation of native forbs and seedlings as well as the existing vegetation.

h. Within the golden-cheeked warbler Conservation Area, monitoring for the presence of brown-headed cowbirds and trapping, when appropriate, is effective in reducing golden-cheeked warbler nest parasitism. Brown-headed cowbird trapping efforts will continue to be conducted according to Texas Parks and Wildlife Department guidelines and in perpetuity unless otherwise approved by the Service. At a minimum two mega-traps on the Wolverton/Evans Road conservation area and one mega-trap on the North Triangle tract will be in service at least one month prior to the GCWA breeding season (March 1), and will continue until June 1 of each year. The frequency of baiting and servicing the traps will be according to the Texas Parks and Wildlife Department guidelines, as a minimum, and will be adjusted if necessary to a higher frequency during the season. This trapping program will be implemented by qualified professionals.

i. Deer and feral hogs often occur in greater density adjacent to suburban areas than in undeveloped areas due to greater availability of food. High densities of deer and feral hogs are known to have a long-term adverse effect on the abundance and distribution of trees, seedlings, and saplings by increasing browsing pressure (deer) and uprooting vegetation (hogs). The subsequent decrease in deciduous tree component of the wooded areas could lead to shifts in both plant and animal communities. The conservation area and other open space areas within the Property will be monitored biannually for excessive browsing pressure, lack of oak seedling recruitment, and vegetation damage. If these disturbances are observed, LIC will ensure the management entity immediately implements appropriate techniques to remedy these damages. Such actions may include hunting, trapping, or other deer and hog population reduction programs. Deer and/or hog populations will be controlled as allowed by state game regulations and local ordinances. The Conservation Area will also be inspected bi-annually for the establishment of exotic plants, and imported fire ants. If deemed necessary, exotic plants, imported fire ants, and other exotic species affecting the golden-cheeked warbler will be treated for control as necessary. These programs will be continued in perpetuity by qualified professionals and both the need for remedial action and the actions taken or not taken will be documented in the annual report described in condition s, below.

j. Access to the Conservation Area will be limited to authorized representatives of LIC, the management entity, easement holder, the Service, and other authorized management personnel, except as otherwise authorized by LIC and the Service. Gated access points will be provided for the authorized entry.

k. LIC or its successor management entity will control unauthorized use and trespass. Any boundary shared by the Conservation Area and on-site or off-site developed land shall be fenced with a minimum 4-foot (1.2-meter) tall, 5-strand barbed wire fence. This fencing will be installed prior to commencement of clearing or development activities within 300 feet (91.4 meters) of a preserve boundary, and will be located at the boundary of the preserve and the development activity. Signage will be placed on the fence at 300-foot intervals to identify the area as a preserve and prohibit unauthorized entry. Such fencing will not include gates where it bounds

residential areas, must be sufficient to deter unauthorized entry to the Conservation Area in perpetuity, and shall be upgraded as necessary. LIC or its successor management entity shall be responsible for constructing and maintaining all fences and signage in appropriate phases as described herein above. Since much of this fence will likely be decorative, and possibly in the back of residential lots, the funds necessary for the construction of this fence are independent of those described in the Sections 6.7 and 6.8.

l. Following installation completion of boundary fences, the use of construction equipment in the Conservation Area during the period when the golden-cheeked warbler is in the area will be limited to that authorized by the Service. However equipment and vehicles necessary to operate, repair and maintain existing water wells, fences, existing ranch and site access roads, cowbird traps, City Public Service power lines and pole installations, monitoring stations, etc., inasmuch as this activity is presently occurring on the site, is excluded from such requirement for Service authorization.

m. Mountain bikes, horseback riding, livestock, cats, dogs, dumping of material (including pool water), pesticides, herbicides, fertilizers, clearing of vegetation, or anything else that is not consistent with management for the golden-cheeked warbler will be prohibited within the Conservation Area.

n. All prospective adjacent homeowners/landowners and all construction crews will be notified of the Conservation Area entry and access restrictions identified above through placement of appropriate signage.

o. At least three times per year, the management entity will inspect Conservation Area boundary fences for evidence of unauthorized access or vandalism. The management entity will immediately repair any damage or upgrade the fence as necessary to control access.

p. Presence/absence surveys for the golden-cheeked warbler will be conducted in the Conservation Area every other year for the first 10 years, then every third year for another 10 years or until 10 years after complete build-out, which ever is later. The first survey will be performed the first spring after permit issuance, with subsequent surveys to be performed as described above. At the end of 20 years, or later if build out is not completed by 2015, it is understood that LIC or its successor management entity can petition the Service, provided no substantial reduction of numbers of golden-cheeked warbler have occurred over these 20 years, to decrease the frequency of, or completely eliminate the need for additional surveys. At that time, the Service will reevaluate the need for continuing these surveys and will attempt to respond to the petition within thirty days of receipt. At a minimum, these surveys will follow Service presence/absence survey protocols in effect as of the spring of 2005.

q. LIC will develop, and residents of the proposed development will be provided with, educational materials that will encourage them to become stewards of the Conservation Area and take pride in the presence of the golden-cheeked warbler. This brochure shall provide information on the natural history of the golden-cheeked warbler, and the importance of this area to the species. The brochure will also discuss the importance of karst features for aquifer recharge. This brochure shall encourage the use of native plants for landscaping, and provide rationale for not using deer and bird seed feeders, and not allowing public access to the Conservation Area.

r. The use of construction equipment will be limited to the Development Area as delineated on Figure 7 (Proposed Alternative Map) except as provided in k, immediately above. Contractors

will avoid the Conservation Area. If any vegetation is unintentionally disturbed within the Conservation Area, LIC or its assigns will ensure that area is immediately replanted with similar native vegetation. Since it is not known if this will occur, or to what extent, it has not been included in the preserve operation and management budget. In the event this occurs, LIC or its successors will provide all necessary funds to ensure the area is fully restored. These funds would be independent of those described in Section 6.7 and 6.8.

s. Operation and management of the conservation area will be funded by LIC. Funding assurances are further described in Section 6.8. All operations and management will be done in perpetuity, and will be documented in the annual report described below (Item s and cc). Initially LIC will fund the management as described in 6.8.1 until the property association, or other entity approved by the Service, assumes responsibility in perpetuity, which will be described and made a requirement in the recorded deed restriction to which the land will be subject.

t. LIC or its successor management entity shall submit an Annual Report to the Service by October 1 of each year the permit is in effect. This report will include, but is not limited to the status of the development, documentation of compliance with all terms and conditions of the permit, implementation of mitigation measures, management actions taken, and golden-cheeked warbler survey results when required. Upon expiration of the permit, the successor management entity will continue to provide annual reports on its management activities.

u. Restrictive covenants making the applicable provisions of this HCP perpetual restrictions that run with the land shall be recorded in the real property records of Bexar County, Texas. For restrictive covenants applicable to this HCP, the Service shall be listed as a third party beneficiary and shall have enforcement rights, along with LIC, and the property owners association (see item r above).

v. To help guide the appropriate management of this mitigation land, within twelve months of issuance of the proposed permit, LIC will develop a detailed land management plan for the Conservation Area in conjunction with the selected land management entity. This land management plan will be reviewed and approved by the Service and will further address the conditions described throughout the HCP.

Additionally, the Service would include the following conditions in any issued permit.

w. The Permittee is authorized to “Take” (kill, harm, or harass) the golden-cheeked warbler on the 1,606-acre Property known as Cibolo Canyon Master Phase II, incidental to activities necessary for the construction, operation, and maintenance of a mixed-use development as described in the Permittee’s application.

x. The authorization granted by the permit is subject to full and complete compliance with, and implementation of, the terms and conditions of the Habitat Conservation Plan (HCP) and all terms and conditions contained in the permit.

y. Upon locating a dead, injured, or sick golden-cheeked warbler, or any other endangered or threatened species, the Permittee is required to contact the U.S. Fish and Wildlife Service’s Law Enforcement Office, in Austin, (512) 490-0948, or San Antonio (210) 681-8419, Texas for care and disposition instructions. Extreme care should be taken in handling sick or injured individuals to ensure effective and proper treatment. Care should also be taken in handling dead specimens to preserve biological material in the best possible state for analysis of cause of death. In conjunction with the care of sick or injured endangered/threatened species or preservation of

biological materials from a dead specimen, the Permittee and its contractor/subcontractor have the responsibility to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.

z. Conditions of the Permit shall be binding on, and for the benefit of, the Permittee and its respective successors and assigns. If the permit requires an amendment because of change of ownership, the Service will process that amendment without the requirement of the Permittee preparing any new documents or providing any mitigation over and above that required in the original permit. A "Certificate of Inclusion" procedure to address the relative rights and responsibilities of a succession of multiple owners within this master-planned project will be used in connection with the permit requested for Cibolo Canyon Property (See Section 6.12). The construction activities proposed or in progress under an original permit may not be interrupted, provided the required special conditions of an issued permit are being followed.

aa. If during the tenure of the Permit the project design and/or the extent of the habitat impact described in the habitat conservation plan is altered, such that there may be an increase in the anticipated take of the golden-cheeked warbler, the Permittee is required to contact the Service and obtain authorization and/or amendment of the Permit before commencing any construction or other activities that might result in take beyond that described in the EA/HCP. It is acknowledged, however, that all suitable golden-cheeked warbler habitat within the Evans Tract and the Wolverton Tract not designated as golden-cheeked warbler preserve is considered impacted by the authorized action, such that land plan modifications within the development areas of Master Phase II should not result in increased take of the golden-cheeked warbler.

bb. The Permit shall be recorded with the County Clerk, Bexar County, Texas, prior to the beginning of development related activities on the Property.

cc. Upon prior written notification to the Permittee, the Service will be allowed access to the Property, accompanied by representatives of the Permittee or its successors or assigns, to inspect the condition of the golden-cheeked warbler habitat and to ensure that the HCP is being implemented according to its terms for the benefit of the listed species. In the event that the Service finds that the HCP is not being implemented according to its terms, the Service has the option, as a last resort, of terminating and revoking the permit. Prior to revocation, the Service will exercise all possible measures to remedy the situation.

dd. Written annual reports of the year's activities, including presence/absence surveys for the golden-cheeked warbler, compliance with all of the terms and conditions described above, and status of clearing and construction will be submitted by October 1 of each year to the Service Field Office 10711 Burnet, Suite 200, Austin, Texas 78758; and to the Service, P.O. Box 1306, Room 4102, Albuquerque, New Mexico 87103.

ee. The current "No Surprises" policy of the Service provides that additional mitigation requirements for land, water, or financial obligations shall not be required of the Permittee or its successors or assigns beyond the level of mitigation provided for in the Permit and the HCP if fully and completely complied with and implemented. With respect to the Permit, the HCP and supporting documents adequately addressed the federally listed golden-cheeked warbler.

6.5 Mitigation Plan

The proposed development provides 760 acres to be preserved and managed for the GCWA in perpetuity. Much of this area occurs adjacent to a 331 acre block of contiguous GCWA habitat that has been preserved for the GCWA in perpetuity by the landowners to the west (Figure 11). The proposed preserve system is also adjacent to an even larger block of privately owned potential GCWA habitat to the east, which opens onto extensive ranch lands. Therefore, the GCWA habitat proposed as mitigation in this HCP will be a part of a larger high quality patch of GCWA habitat to remain undisturbed in perpetuity. The GCWA habitat proposed as mitigation in this HCP combined with the adjacent GCWA habitat to be preserved and managed in Indian Springs totals approximately 1,091 acres (441.5 hectares) and the habitat value of the two pieces being preserved together is enhanced – the sum being of greater habitat value than either piece standing alone and fragmented.

Over time, the viability of GCWA habitat on the development portion of the Property that has not already been cleared of juniper by others will be significantly diminished. Therefore, in addition to minimization efforts, an appropriate mitigation and O&M plan will be implemented. To mitigate for potential disturbance to GCWA habitat in the development areas on the Evans Road and Wolverton Tract portions of the Property, the conditions above would be included in the proposed section 10(a)(1)(B) permit.

6.6 Operation and Management of the Mitigation Lands

Operation and management of the conservation area will be funded by LIC. Funding assurances are further described in Section 6.8. All operations and management will be done in perpetuity and will be documented in the annual report described in conditions s and cc, above. Operation and management may be conducted by a conservation easement holder such as Bexar County Land Trust, by a Service approved entity under contract with the property owners association such as the Indian Springs Conservation Association, inc., or another entity acceptable to the Service.

6.7 Adaptive Management and Changed Circumstances

Adjustments to the management program may be warranted if the Service makes a determination that the goals or management objectives of this HCP are not being met, or if the property undergoes changed circumstances. Adjustments will be made within a reasonable time in consultation with the Service. Adaptive management actions will be funded only to the extent of the operation and management budget, a portion of which is budgeted for contingency funding and may require reallocation of operation and management funds as necessary (See Section 6.8.1).

Examples of changed circumstances that may occur sometime in the future include, but are not limited to:

- A cave is encountered during construction containing listed karst invertebrates
    - See Section 6.4d
- Oak wilt occurs in the preserve or development
    - Treat according to current recommendations by Texas Forest Service (See Section 6.4a)
- Wildfire occurs in the preserve or development
    - The management entity will assign a professional qualified to assess impacts to GCWA habitat and potential benefits of wildfire to make a recommendation (containment or extinguish). Additionally, the management entity will coordinate annually with the local fire department to keep them informed of preserve access points, existing roads, fire threat conditions, and any other relevant information.

- While the LIC does not currently anticipate this need, LIC may, from time to time, request that the Service consider approving easements for the installation of utilities over portions of the Conservation Area in order to provide utility services to the project described in this HCP; provided, however, that LIC shall take reasonable efforts to avoid the necessity of placing utilities within the Conservation Area and, where that necessity cannot reasonably be avoided, shall implement practicable measures to avoid impacts to the golden-cheeked warbler. These measures could include, by way of example, limiting cleared widths of rights-of-way, maximizing utilization of existing open areas and ranch roads, avoiding clearing during the warbler breeding season, and using accepted practices to prevent the spread of oak wilt. LIC acknowledges that the Permit does not authorize any "take" of the golden-cheeked warbler in connection with potential utilities within the Conservation Area and that the Service would not approve without subsequent permitting action, the outcome of which can not be prejudged, the construction of utilities in the Conservation Area if that construction would rise to the level of causing take of the golden-cheeked warbler.

- The Services will work with LIC to identify measures necessary to avoid take of, jeopardy to, or adverse modification of the critical habitat of, in the event a species not covered under the proposed permit becomes listed under the ESA and may be affected by covered activities. LIC will implement these measures until the permit is amended to include such species, or until the Service notifies LIC that such measures are no longer needed to avoid jeopardy to, take of, or adverse modification of the critical habitat of, the non-covered species.

Additional adaptive management options to be considered may include, but are not limited to:

- the modification of established hunting, trapping, or other deer and feral hog reduction programs to prevent intensive grazing which may prevent the establishment of hardwood seedlings;
- control of brown-headed cowbirds to reduce the potential for GCWA nest parasitism;
- installation of additional fencing or other barriers, if required, between developed areas and the Conservation Area to prevent deleterious impacts from the developed areas and/or trespassing; and
- prescribed burning or thinning used to control dense stands of juniper, reduce fuel accumulation, and to promote hardwood regeneration.

6.8 Funding for Operation and Management Budget

Conservation planning requires sufficient funding be made available to implement the EA/HCP. LIC or its successor management entity will provide such funds as may be necessary to carry out its obligations under the EA/HCP as they are needed. As described below, the Applicant has committed to provide funding adequate to cover expected operation and management costs and to secure this funding through provision of an appropriate surety bond, letter of credit, or other acceptable financial mechanism. Initially, LIC will provide funding and this will be guaranteed by LIC until such time as the property owners association assumes responsibility for operation and management and funding for the those activities. The property owners association, through recorded deed restrictions, will have the responsibility for operation and management of the Conservation Area and the authority to levy annual assessments for funding in perpetuity. LIC or its successor management entity will notify the Service if LIC's, or its successor management entity's funding resources have materially changed, including a discussion of the nature of the change. The budget provided below is a preliminary attempt to estimate costs associated with managing the conservation area. The final budget will ultimately be negotiated between LIC and the management entity. It could vary from that provided below. The Service will review and approve the final budget.

6.8.1 Operation and Management Budget

The estimated budget for operation and management of the 760 acres of the Conservation Area includes GCWA surveys, GCWA habitat monitoring and maintenance, and animal control for the next 20 years. However, LIC recognizes operation and management responsibility is required in perpetuity and is provided for in the associated funding mechanism as described elsewhere herein.

The budget for accomplishment of periodic GCWA surveys and annual habitat monitoring by a management entity in the conservation area has been developed based upon the experience of the project consultants and professionals and the scopes of work and associated costs with other GCWA preserve operating and maintenance efforts in central Texas. It also considered the current costs associated with BHC trapping and habitat conservation and maintenance costs for the Property at present. As identified in the budget below, the total for the twenty-year period is approximately $1,611,000, which includes a 4 percent per annum inflation factor for costs.

LIC will provide a surety bond or a letter of credit in this total amount to the management entity through a surety insurer in the same manner and with the same institution (or with an equivalently sound surety insurer company) that presently provides financial performance guarantees on behalf of LIC to the COSA for the overall project. At such time as the property owner's association is established and funded, the financial responsibility for the annual expenditure will be assigned to and become the responsibility of the association. The Deed restrictions will provide for a graduated initial payment to be collected from property owners to establish an adequate reserve, and for the ability to the association to levy annual assessments to meet its needs for operating capital for this and other O&M purposes within the community. The detailed annual figures for the budget are included on the following page herewith and have been reviewed by the Service and the selected management entity.

6.9 Unforeseen Events

6.9.1 No Surprises Assurances

The "Covered Species" listed below is considered adequately addressed under the HCP and is, therefore, covered by Service's No Surprises policy assurances. In the event that it is demonstrated by the Service that Unforeseen Circumstances exist during the life of the Permit, and additional conservation and mitigation measures are deemed necessary to respond to Unforeseen Circumstances, the Service may require additional measures of Applicant where the HCP is being properly implemented, but only if such measures are limited to modifications within the HCP or related permit documents for the Covered Species, and maintain the original terms of the HCP to the maximum extent possible. Notwithstanding the foregoing, the Service shall not:

i) Require the commitment of additional land, water or financial compensation by the Applicant without the consent of the Applicant; or
ii) Impose additional restrictions on the use of land, water, or natural resources otherwise available for use by Applicant under the original terms of the HCP, including additional restrictions on covered actions included under the HCP.

6.9.2 Effect of Unforeseen Circumstances on Permit

Except as provided above, notwithstanding the occurrence of Unforeseen Circumstances, as long as the Applicant continues to properly implement the provisions of the HCP and any additional measures

Tentative Cost Estimate (20 year timeline)

		1				2				3				4				5			
Year	NOTES	PE	PM	GrS	Total	PE	PM	GrS	Total	PE	PM	GrS	Total	PE	PM	GrS	Total	PE	PM	GrS	Total
GCW Surveys		0	40	240	$ 23,000.00					0	40	240	$ 24,876.80					0	40	240	$ 26,906.76
Habitat Monitoring (as needed)	N1	8	96	64	$ 16,320.00	8	64	32	$ 9,720.00	8	64	32	$ 10,108.80	8	64	32	$ 10,513.15	8	64	32	$ 10,933.68
Animal Control (as needed)	N1	4	64	64	$ 4,402.60	4	64	64	$ 4,578.80	4	64	64	$ 4,761.74	4	64	64	$ 4,952.21	4	64	64	$ 5,150.30
Fence					$ 100,000.00				$ 100,000.00												
Tresspass Signage		0	0	6	$ 1,250.00					0	0	4	$ 320.00	0	0	4	$ 332.80	0	0	4	$ 346.11
Operation and Maintenance Plan Prep		24	88	24	$ 13,520.00					0	16	8	$ 2,160.00	0	16	8	$ 2,246.40	0	16	8	$ 2,336.26
Resident Education	N2	4	8	40	$ 4,500.00	0	4	20	$ 1,980.00	0	4	20	$ 2,059.20	0	4	20	$ 2,141.57	0	4	20	$ 2,227.23
Adaptive Management (if needed)	N3									16	32	32	$ 8,393.22								
Contingency Fund (if needed)	N3									80	80	80	$ 26,823.68								
Administrative Costs	N4				$ 40,000.00				$ 8,000.00				$ 8,652.80				$ 8,998.91				$ 9,358.87
TOTAL		40	296	438	$ 201,992.60	12	132	116	$ 124,278.80	108	300	480	$ 88,156.24	12	148	128	$ 29,186.05	12	188	368	$ 67,259.19

	6				7				8				9				10			
Year	PE	PM	GrS	Total	PE	PM	GrS	Total	PE	PM	GrS	Total	PE	PM	GrS	Total	PE	PM	GrS	Total
GCW Surveys					0	40	240	$ 29,102.34					0	40	240	$ 31,477.08				
Habitat Monitoring (as needed)	8	64	32	$ 11,371.03	8	64	32	$ 11,826.87	8	64	32	$ 12,298.90	8	64	32	$ 12,790.86	8	64	32	$ 13,302.49
Problem Animal Control (as needed)	4	64	64	$ 5,358.01	4	64	64	$ 5,570.57	4	64	64	$ 5,793.39	4	64	64	$ 6,025.13	4	64	64	$ 6,266.13
Fence																				
Tresspass Signage	0	0	4	$ 359.96	0	0	4	$ 369.96	0	0	4	$ 374.36	0	0	4	$ 389.33	0	0	4	$ 404.90
Operation and Maintenance Plan Prep	0	16	8	$ 2,428.71	0	16	8	$ 2,526.88	0	16	8	$ 2,627.97	0	16	8	$ 2,733.09	0	16	8	$ 2,842.41
Resident Education	0	4	20	$ 2,316.32	0	4	20	$ 2,408.97	0	4	20	$ 2,505.33	0	4	20	$ 2,605.54	0	4	20	$ 2,709.77
Adaptive Management (if needed)	16	32	32	$ 9,441.28									16	0	32	$ 10,620.10				
Contingency Fund (if needed)	80	80	80	$ 30,172.80									80	80	80	$ 33,940.51				
Administrative Costs				$ 9,733.22				$ 10,122.55				$ 10,527.46				$ 10,948.55				$ 11,386.49
TOTAL	108	260	240	$ 71,180.76	12	188	368	$ 81,817.15	12	148	128	$ 34,127.40	108	268	480	$ 111,630.18	12	148	128	$ 36,912.20

	11				12				13				14				15			
Year	PE	PM	GrS	Total	PE	PM	GrS	Total	PE	PM	GrS	Total	PE	PM	GrS	Total	PE	PM	GrS	Total
GCW Surveys	0	40	240	$ 34,046.82									0	40	240	$ 36,298.89				
Habitat Monitoring (as needed)	8	64	32	$ 13,834.69	8	64	32	$ 14,387.97	8	64	32	$ 14,983.49	8	64	32	$ 15,662.03	8	64	32	$ 16,184.61
Problem Animal Control (as needed)	4	64	64	$ 6,516.78	4	64	64	$ 6,777.45	4	64	64	$ 7,048.54	4	64	64	$ 7,330.48	4	64	64	$ 7,623.71
Fence																				
Tresspass Signage	0	0	4	$ 421.10	0	0	4	$ 437.94	0	0	4	$ 455.46	0	0	4	$ 473.68	0	0	4	$ 492.63
Operation and Maintenance Plan Prep	0	16	8	$ 2,958.11	0	16	8	$ 3,074.35	0	16	8	$ 3,197.33	0	16	8	$ 3,326.22	0	16	8	$ 3,458.23
Resident Education	0	4	20	$ 2,818.18	0	4	20	$ 2,930.88	0	4	20	$ 3,048.12	0	4	20	$ 3,170.04	0	4	20	$ 3,296.86
Adaptive Management (if needed)					16	32	32	$ 11,846.16									16	32	32	$ 13,437.61
Contingency Fund (if needed)					80	80	80	$ 38,178.48									80	80	80	$ 42,945.68
Administrative Costs				$ 11,841.96				$ 12,316.63				$ 12,808.28				$ 13,320.59				$ 13,853.41
TOTAL	12	188	368	$ 72,434.30	108	260	240	$ 90,048.86	12	148	128	$ 41,621.20	12	188	368	$ 81,478.74	108	260	240	$ 101,292.72

	16				17				18				19				20			
Year	PE	PM	GrS	Total	PE	PM	GrS	Total	PE	PM	GrS	Total	PE	PM	GrS	Total	PE	PM	GrS	Total
GCW Surveys					0	40	240	$ 43,078.67									0	40	240	$ 48,457.63
Habitat Monitoring (as needed)	8	64	32	$ 16,831.90	8	64	32	$ 17,606.17	8	64	32	$ 18,206.38	8	64	32	$ 18,983.59	8	64	32	$ 19,890.94
Problem Animal Control (as needed)	4	64	64	$ 7,928.86	4	64	64	$ 8,246.80	4	64	64	$ 8,576.68	4	64	64	$ 8,918.66	4	64	64	$ 9,275.40
Fence																				
Tresspass Signage	0	0	4	$ 512.33	0	0	4	$ 532.82	0	0	4	$ 554.14	0	0	4	$ 576.30	0	0	4	$ 599.35
Operation and Maintenance Plan Prep	0	16	8	$ 3,596.66	0	16	8	$ 3,740.42	0	16	8	$ 3,890.04	0	16	8	$ 4,046.64	0	16	8	$ 4,207.47
Resident Education	0	4	20	$ 3,428.72	0	4	20	$ 3,566.87	0	4	20	$ 3,708.50	0	4	20	$ 3,856.84	0	4	20	$ 4,011.12
Adaptive Management (if needed)									16	32	32	$ 16,116.71								
Contingency Fund (if needed)									80	80	80	$ 48,307.93								
Administrative Costs	80	260	520	$ 14,407.66	80	260	520	$ 14,983.85	80	260	520	$ 15,583.20	80	260	520	$ 16,206.53	80	260	520	$ 16,854.79
TOTAL	92	408	648	$ 48,706.71	92	448	888	$ 91,862.60	188	520	760	$ 113,840.53	92	408	648	$ 62,637.57	92	448	888	$ 103,096.60

NOTES

N1 Habitat Monitoring and Animal Control are based upon present expenditures and can be aggregated in annual budgeting by the management entity.

N2 Resident Education includes basic interpretative and educational materials and signage, and contributions are anticipated from resort eco-tourism budget.

N3 Adaptive management (AM) costs will only be identified in annual budgeting for year(s) after which permit AM requirements are identified.

N4 Administrative costs include first year setup expenses and may include reimbursements for allowed advance expenditures.

GENERAL Initial conservation easement holder and preserve management entity may or may not be the same organization. Either entity may be changed at any time as is provided in the permit documents. It is acknowledged that the Permittee intends that fee title to the preserve land will be transferred to and become the responsibility of the property owner's association or the Cibolo Canyons Special Imp. Dist., created under Sce. 376 c, Texas Local Govt Code, which may require an amendment to the initial Implementing Agreement. Annual budget amounts will be net of unspent amounts from previous year(s) but in no event will exceed the budget figures shown herein, as provided in the permit provisions.

Grand Total	$ 1,611,248.01

required by the Service in accordance with section 6.9.1 hereof, the Permit will remain in full force and effect.

6.9.3 Notice of Unforeseen Circumstances

The Service shall notify the Applicant in writing of any Unforeseen Circumstances of which the Service becomes aware that may affect the obligations of the Applicant under the Permit or the HCP.

6.9.4 Covered Species

Species adequately covered under the HCP:

Golden-cheeked warbler
Order: Passeriformes
Family: Emberizidae (sub family: Parulidae)
Genus: Dendroica
Species: chrysoparia"

6.10 Certificates of Inclusion

The Property to be covered by this EA/HCP is part of a proposed master planned development that will include a variety of components to be developed and occupied over time by a variety of parties. Assuring that the various owners and developers of different components of the project benefit from and are bound by the proposed ESA section 10(a)(1)(B) permit and that a single party maintains the overall monitoring and reporting requirements has proven very complex in similar circumstances. Recently, the Service and certain Applicants have developed a "Certificate of Inclusion" procedure to address the relative rights and responsibilities of a succession of multiple owners within a master-planned project. The Applicant proposes that such a procedure will be used in connection with the permit requested for Cibolo Canyon. In that connection, the Implementing Agreement (Appendix A) for the permit will include specific provisions describing the Certificate of Inclusion process and will attach templates for Agreements of Inclusion to be signed by, and Certificates of Inclusion to be issued to, parties who acquire certain portions of the project for development and/or use and enjoyment.

6.11 Compliance With Section 10(a)(1)(B) Permit Issuance Criteria

As required by section 10(a)(2)(B) of the ESA, the Service, as the designee of the Secretary of the Interior, must issue a requested section 10(a)(1)(B) permit if the Service finds: 1) the taking will be incidental; 2) the Applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking; 3) the Applicant will ensure that adequate funding for the plan will be provided; 4) the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild; and 5) the Applicant includes in its HCP such measures that the Service requires as being necessary or appropriate for purposes of the plan. This HCP meets each of these five criteria:

1. The proposed taking will be incidental. The Applicant desires to develop the Property because of its location and desirable physical attributes for the intended end use as described in this HCP. Any possible take of GCWAs will be incidental to, and not the purpose of, the otherwise lawful activity described in this HCP.

2. Impacts of the anticipated take will be minimized and mitigated to the maximum extent practicable. The Service's HCP handbook explains that this finding typically requires consideration of two factors: adequacy of minimization and mitigation program, and whether it is

the maximum that can be practically implemented by the Applicant. To the extent that the minimization and mitigation program can be demonstrated to provide substantial benefits to the species, less emphasis can be placed on the second factor. See Service's HCP Handbook at 7-3 to 7-4.

a. *The minimization and mitigation program provides substantial benefits to the species.* The minimization and mitigation program consists of measures that reduce or offset potential adverse effects to the covered species in this HCP as a result of the construction of the Proposed Alternative. Species conservation efforts include, but are not limited to: seasonal restrictions and oak wilt prevention applied to all clearing activities, restoration of temporarily disturbed vegetation, habitat enhancement, a measurable and enforceable monitoring program, adaptive management linked to the monitoring program, and the preservation and management of 760 acres of GCWA habitat (See Section 6.2). This area has been observed to support at least 12 GCWA territories on the North Triangle, Evans, and Wolverton tracts. Preservation and management of this area would make it possible to implement the first steps toward the creation of an important new third GCWA preserve in the Cibolo Canyon area. This may have significant benefits towards achieving recovery of the species. Moreover, habitat areas that will be affected under this HCP are of lower quality than those that will be preserved and managed in perpetuity for the benefit of the GCWA. The minimization and mitigation included in the HCP is sufficient to fully offset and compensate for the requested impacts. Moreover, due to the seasonal restriction on clearing activities and the preservation of large areas of contiguous habitat under the HCP, the Applicant believes that the action may not even rise to the level of "take" of individual members of the species. All habitats will be modified while the GCWA is in its wintering range in Mexico and Central America. LIC believes there is little evidence that such habitat modification or loss will actually result in death or injury to GCWA upon their return. No study has shown that GCWA do not readily adjust to this circumstance and locate other suitable habitat. Nonetheless, because it is possible that the action could rise to the level of "take" of GCWA, and because the action may affect the species more generally through a reduction in total acres of suitable habitat, the Applicant has proposed this HCP and sought a permit so that all potential impacts will have been analyzed and authorized.

b. *The minimization and mitigation program is the maximum that can practicably be implemented by the Applicant.* The minimization and mitigation program is demonstrably adequate to offset the impacts of the action and is, in fact, beneficial to the species; therefore, less emphasis need be placed on the question of practicability. Nevertheless, the minimization and mitigation program is the maximum that can practicably be implemented by the Applicant. Development lines have been pulled back to avoid impacts to optimal GCWA habitat; the majority of the development would occur in non- or low quality GCWA habitat.

Early in the environmental planning for the project, with the fore-knowledge of the use of portions of the Evans Road Tract by the GCWA, the Applicant looked at alternative plans for use of the land, some of which are fully described and discussed in this EA/HCP. With experienced ornithologists and biologists evaluating the vegetative character of the site, and with significant past experience with Service biologists and permit criteria, LIC's representatives spent months looking at other sites for off-site mitigation options that LIC's consultants advised were adequate for possible and probable scenarios of `take' and mitigation requirements. The Wolverton Tract was evaluated for habitat before it was purchased and was found to have recently been partially cleared of ashe juniper. However, the canyon areas were only partially cleared; leaving the more diverse vegetative complex in canyons. These areas have attracted GCWAs. This fact guided the avoidance strategy in the land planning on the Wolverton Tract.

LIC also vigorously pursued several possible off-site mitigation scenarios. LIC entered into contracts to purchase three other parcels for use in different development scenarios and on which to establish a GCWA mitigation bank for its future use - among them the Reeh Ranch to the east of the project and portions of the Gallagher Ranch in the far northwest quadrant of San Antonio. During that period of a year or so, LIC representatives worked with The Nature Conservancy and met with representatives of the Service, meeting both on the various tracts being considered and at the offices of the Service in Austin, to obtain their opinion and receive their guidance regarding the suitability of each tract for GCWA mitigation.

LIC acquired one of the parcels closest to the project site, the North Triangle Tract after the Service advised that a different potential mitigation tract, the several thousand acre Gallagher Ranch in west-northwest Bexar County, did not contain enough high quality vegetation to serve as a habitat mitigation bank for the GCWA and was too far from the project area. Proximity of the conservation area to the site of incidental take was said, by Service representatives to be of highest importance. The North Triangle Tract had favorable attributes, whether gauged by quality of vegetative components or by number of GCWAs expected to be located on the property, which has proven to be correct, and it was in closest proximity to the project. In addition, it is part of a larger block of higher quality habitat that, due to various development constraints, including topography and floodplain, is likely to remain undeveloped, if not eventually specifically managed for the species.

Another large ranch property, again in west northwest Bexar County was dropped from consideration after an environmental buyer (The Nature Conservancy) acquired an option on it, and a third was dropped from consideration due to the fractiousness and complexity of its ownership along with its distance from the project. Further, efforts at off-site mitigation by acquisition of mitigation land, especially a large tract of land in proximity to the project site and of high habitat quality (such as the Reeh Ranch), added to costs of community development to such a degree that several of the alternatives became very difficult to pursue, financially. In this process, it became clear to LIC that acquiring an off-site mitigation bank combined with the front end carried costs of bringing utility commitments to a property and securing its entitlements had become prohibitive and no longer practicable in this instance in their combination.

At this point, LIC turned to an on-site mitigation strategy for its close proximity, scaling back its community plan area and utilizing portions of the North Triangle Tract, the Wolverton Tract, and Evans Road Tracts for habitat preservation and green space, and for preservation of existing territory through on-site mitigation. This on-site, same area mitigation strategy has been supported by the Service as biologically preferable after a review by all of its local GCWA experts. This is because the on-site preservation, together with adjacent preservation via a recent agreement between the service and another landowner, create a critical first step towards preserving a large, contiguous block of habitat in this area of Bexar County.

In considering all of the individual mitigation sites listed above, off-site and on, LIC used its experience and that of its consulting team to evaluate both the vegetative make-up and the presence or absence (if known) of GCWAs and other components of each site being considered and ranked the individual contribution of those elements in an informal scoring methodology. In the case of applying that information to each alternative considered, LIC used a second informal scoring methodology to assign or correlate relative value against relative need among the several alternative land use plans that were emerging as the preferable alternatives. In the end, when assigning an amount of relative `take' or `harm' to either a member or members of the species itself, and then to `habitat' of the GCWA (based on other past and current work with the Service 10(a) permitting staff and the outcomes of those permit discussions), the differences in impacts to

either species or habitat that would be attributable to any of the top six or seven plans, including the "No Action" Alternative was finally very similar for several reasons.

- On April 22, 2003, Service biologists conducted a site visit of the proposed Phase I development site. This site visit assisted the Service in writing a letter on July 3, 2003, stating that there is no information that indicates that the GCWA is present within the Master Phase I area. This focused attention on Master Phase II of the Cibolo Canyon Property and LIC voluntarily entered into this Permit and habitat conservation planning process for Master Phase II.

- The project site is an in-fill project; much of the surrounding area and even portions of the project site itself has been fragmented, disturbed, is in present agricultural use for cattle-raising and game management, or is already subdivided.

- The high quality, contiguous habitat in the area is comprised of the Indian Springs conservation area, the areas proposed for preservation under this HCP, and other areas trending towards the east, northeast.

- Much of the Property is best characterized as habitat that is of relatively low quality. The quality of the GCWA habitat on the majority of the Property, excluding the North Triangle and areas proposed to be set aside within Evans and Wolverton, is of lower quality considering its age, canopy and physical make-up.

The strategy described in the HCP is an aggressive financial commitment by LIC, presently amounting to some 4 million dollars in actual costs, substantial additional intangible costs to the project, and the value of the proposed mitigation land, which conservatively exceeds $3.5 million. Further expenditures on minimization and mitigation measures would be substantially disproportional to any benefits conferred to the species in this location, as well as being substantially detrimental to the financial viability of the project.

3. Adequate funding for the plan will be provided.

LIC or its successor management entity will provide such funds as may be necessary to carry out its obligations under the EA/HCP as they are needed. The Applicant has committed to provide funding adequate to cover expected operation and management costs and to secure this funding through provision of an appropriate surety bond, letter of credit, or other acceptable financial mechanism. Initially, LIC will provide funding and this will be guaranteed by LIC until such time as the property owners association assumes responsibility for operation and management and funding for the those activities. The property owners association, through recorded deed restrictions, will have the responsibility for operation and management of the Conservation Area and the authority to levy annual assessments for funding in perpetuity. LIC or its successor management entity will notify the Service if LIC's, or its successor management entities funding resources have materially changed, including a discussion of the nature of the change. The budget provided herein is a preliminary attempt to estimate costs associated with managing the conservation area. The final budget will ultimately be negotiated between LIC and the Management entity, and could vary from that provided. The Service will review and approve the final budget.

4. The taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild.

Taken as a whole, the direct, indirect, and cumulative impacts of the proposed action will not appreciably diminish the likelihood of survival and recovery of the GCWA in the wild. The population of the GCWA in 1990 was estimated to be 13,800 pairs (Service 1992). Breeding season habitat is present in 36 counties in Texas and likely exceeds 834,869 acres (338,000 hectares), according to the 1992 Service Recovery Plan. The loss of habitat associated with this HCP will not have a material, negative impact on the prospects for survival and recovery of the GCWA, and the 760 acres of preservation of habitat under the HCP adequately compensates for habitat loss and provides an important benefit to potential recovery.

5. The HCP includes all measures that the Service required as being necessary or appropriate for purposes of the plan. The Applicant developed the HCP in coordination with the Service and included all conservation measures required by the Service.

The Service is entitled to rely upon its powers under Section 11 of the ESA to enforce the terms of the section 10(a)(1)(B) permit. Moreover, in this case, by virtue of the proposed Implementing Agreement (as described in Appendix A), the Service also retains contractual rights of enforcement. In addition, the Implementing Agreement is an agreement among the parties in possession of the rights, the obligations and responsibilities for compliance with and enforcement of the section 10(a)(1)(B) permit. Implementing agreements are not required for issuance of an section 10(a)(1)(B) permit, but are a discretionary measure that can be taken by the Service and the applicant to ensure compliance in larger-scale or more complex HCPs. In this case, that document will include as parties, the Service, the Applicant, and possibly an environmental or conservation organization that will hold, manage, and maintain the Conservation Area. A number of the measures included in the Project and considered in the EA/HCP are also memorialized in and/or required under agreements between the applicant and local governmental authorities, thus creating multiple avenues of potential enforcement by third parties, if required.

7.0 AMENDMENT PROCEDURE

It is necessary to establish a procedure whereby the Section 10(a)(1)(B) permit and its associated Implementation Agreement can be amended. However, it is important that the cumulative effect of the amendments will not jeopardize any federally listed species or other rare species. Amendments must be evaluated based on their effect on the habitat as a whole. The Service must be consulted and agree on all proposed amendments. The following sections outline the types of proposed amendments and the applicable amendment procedures.

7.1 Amendments to Development Plans

Without conceding liability under the ESA and considering the above, the Applicant concludes that any change in the development plan that does not affect the size or configuration of the Development Area and the conservation area cannot pose any threat of an additional amount of take to the GCWA. This recognizes, logically and scientifically, that the entire development site is mitigated for, therefore, any change within the development envelope as shown in Figure 7 would not constitute additional take of the GCWA. Further, the Applicant concludes that change within the development envelope also would not result in additional adverse impact on the conservation lands or any other offsite area of GCWA habitat that are not already accounted for in the mitigation plan. Therefore, LIC believes, and has determined, no amendment of the permit should be or could be required due to any amendment of the development plan within those areas identified as ‘development’ in the community plan (Figure 7).

7.2 Minor Amendments to HCP

Minor amendments involve routine administrative revisions or changes to the operation and management program and do not diminish the level or means of avoidance, minimization, and/or mitigation. Such minor amendments include corrections in land ownership, minor revisions to surveys, property descriptions, monitoring or reporting protocols, and minor changes in the boundaries of the Conservation Area that result in no net loss of mitigation and do not otherwise alter the effectiveness of the EA/HCP. Such minor amendments do not alter the terms of the Permit. Upon written request of LIC, the Service is authorized to approve minor amendments to this EA/HCP, if the amendments do not conflict with the primary purpose of the EA/HCP.

7.3 All Other Amendments

All other amendments to the permit, HCP, Implementing Agreement, and supporting agreements, except as described in Section 6.10.2, will be considered an amendment to the section 10(a)(1)(B) permit, subject to any other procedural requirements of federal law or regulation which may be applicable to the amendments of such a permit.

8.0 DURATION

This HCP is written in anticipation of issuance of an ESA section 10(a)(1)(B) permit for a period of 30 years. Thirty years is defined for the permit period due to the long-term build-out plan and the long-term occupancy of the Property for the desired purposes.

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